Youth Detoxification and Residential Treatment Literature Review

Best and Promising Practices in Adolescent Substance Use Treatment Final Report

June 2006

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Executive summary

Project overview

The Alberta Alcohol and Drug Abuse Commission (AADAC) is a leader in the provision of high quality substance use prevention, treatment, outpatient, residential and detoxification programming. In order to ensure ongoing quality of service, it is important to regularly review developments in the research related to treatment efficacy and best practices in other jurisdictions.

Many programs across Canada and internationally have been developed to address the variety of substance use issues among youth. An important question arises, however: how do service providers know that what they are providing is what should be provided? The *Youth Detoxification and Residential Treatment Literature Review* will inform AADAC about the literature and research related to the effectiveness of adolescent substance use treatment in residential, detoxification and stabilization, wilderness, experiential and family-centred treatment settings.

This document

- identifies, critiques and reports the evidence and best practices in the literature as they pertain to the appropriateness, effectiveness, feasibility, and quality of treatment approaches among a youth population in the settings identified above; and, further, includes information regarding treatment "best fit," treatment outcomes as they relate to length of stay, and documentation related to concurrent disorders
- identifies, critiques and reports the documented impacts of these treatment approaches on the youth population
- identifies, critiques and reports the barriers and challenges to success for these treatment approaches
- makes recommendations to AADAC, based on a critique of the evidence and best practices identified in the literature, as to what approaches are best suited to treating youth
- discusses implications specific to AADAC as developed by an AADAC Advisory Committee

Literature search and review process

A systematic literature search was conducted to identify key published and unpublished literature (in English) discussing evidence of the effectiveness of residential, detoxification and stabilization, wilderness, experiential and family therapies for youth with substance use disorders. Databases reviewed included the Cochrane Collaboration, Medline and PsycINFO. A selection of major

library catalogues; grey area literature repositories; free Internet-accessible databases; and websites of government departments, think tanks, research institutes and other relevant organizations was searched for the grey area literature, which included books, reports, and unpublished material.

For the purposes of this review, a treatment was considered to be a best practice when evidence of effectiveness was presented in the findings of individual research or evaluation reports. The analyses and conclusions of related review articles were also considered.

A total of 468 documents of potential interest was identified. Following a series of criteria applications, descriptor refinements and manual screenings, 26 articles qualified for review, some of which addressed more than one setting within the same article. Of the 26 articles, nine articles related to the residential setting, 12 articles qualified in the "family-centred approaches" area, there were two wilderness and two experiential setting articles, and seven studies qualified under an "other" category. No articles specifically describing detoxification and stabilization programs met the criteria. The 26 qualified articles were reviewed and analysed. Approximately 20 further general documents fell under the category of program descriptors, theory or opinion (related to adolescent and/or adult treatment), were considered to supplement the analytical findings, but were not included in the analysis.

The procedure for assessing the quality of the study followed the guidelines developed by the Centre for Reviews and Dissemination (2001).

Findings

The treatment of adolescent substance use cannot be developed based on the experiences of adult research. Specific consideration needs to be given to cognitive and developmental levels, experiences, family dynamics, peers, and type of substance use.

Overall, based on the level of evidence and sample size, the quality of most articles reviewed was good. Vaughn and Howard (2004) also found high methodological quality, standardized interventions and appropriate statistical analysis in their review. Thus, much of the limited work that is known to exist has been assessed, here and elsewhere, as being of good quality.

Another positive feature of many studies reviewed was the use of standardized and validated instruments for data collection. Many studies included a range of instruments and some studies used other sources of data such as urine testing to validate self-reported data.

A major limitation (in addition to the small number of studies meeting the review criteria) was the complex nature of many of the studies included in the review. For example, in many studies the interventions were multi-faceted and involved several treatment approaches, within or across settings. Given the

interrelatedness of such programs, it was particularly difficult to segregate the five unique treatment settings from each other for independent analysis. Therefore, it is not clear which factors (the setting, treatment approach, specific interventions, etc.) led to the results obtained.

Furthermore, none of the reviewed studies had among their goals the intent to assess the effectiveness of the treatment setting, many did not compare the treatment group(s) to a control group, and/or the duration and intensity of treatment varied, thus making it difficult to assess the effectiveness of interventions in a particular setting.

Finally, many of the articles reviewed are based out of the United States (U.S.) and target specific cultural populations. Therefore, relevance to the Alberta context may be limited.

Residential services

Residential programs encompass a multitude of individual treatment interventions within that setting, so a review of the efficacy of each of those interventions would be necessary to truly understand the overall effectiveness of residential treatment.

Most of the residential studies were observational studies, with or without controls, and had adequate sample sizes. Of the nine programs that involved residential settings, five directly assessed the effectiveness of interventions aimed at youth. Overall, these five studies show treatment in a residential setting to be effective, although gains diminished over time (where assessed). Generally, findings were similar despite differences in treatment approaches and study rigour.

Detoxification and stabilization

The role and function of detoxification and stabilization services were found in the literature to a limited degree within the articles discussing residential setting interventions. Overall, detoxification and stabilization services were considered to be one initial element of an overall treatment regime.

Family-centred practice

Family-centred practice as a treatment approach is difficult to define succinctly, as it can involve activities ranging from letter writing and family visits, to direct parent involvement in certain elements of treatment related to coping with the addiction, to intensive individual and family therapy. However, there was a consistent theme regarding the importance of addressing family issues to successfully treating adolescents with substance use issues.

Though eight family-centred studies were included in the review, it was unclear from the research as to whether family "involvement" in treatment per se is

more effective than addressing family issues in individual treatment with the youth.

A detailed analysis of each family therapy practice was beyond the scope of this review. However, cognitive behavioural therapy and multi-dimensional family therapy (Dauber, 2004; Rowe, Parker-Sloat, Schwartz & Liddle, 2003; Vaughn & Howard, 2004) were evidence-based treatments found to have positive effects when treating youth who use substances.

Overall, family-centred approaches appear to be effective, although which particular approach is effective, whether gains can be maintained, and whether family involvement is necessary are less clear.

Wilderness-based programming and experiential learning

Information in the literature related to the measured impact of wilderness-based or experiential learning programs was limited. However, these service options were identified in some articles as potentially helping to teach substance-using youth the importance of group dynamics, teamwork, self-mastery, and development of good relationships with themselves and others.

Two wilderness and/or experiential programs were included in the review, but these had limited study rigour. There is not enough existing research to allow conclusions to be drawn about wilderness or experiential approaches.

In the articles reviewed, experiential learning included physical activities, group co-operative activities and activities that helped participants learn to develop problem-solving and other coping skills.

While the term "experiential" is not consistently defined within the literature, there was support for the need to reach adolescents "where they are" developmentally, emotionally, and physically.

Other settings

Together, these studies raise the possibility of improving youth outcomes through parental training, school-based approaches and community-based approaches, although no definitive conclusions can be drawn from current literature.

Best fit

Assessing the individual elements associated with a youth's substance use is vital to determining the most appropriate treatment components and approach, as there are no agreed-on perspectives regarding what treatment is best for whom, when or where.

Length of stay and treatment outcomes

The relationship between length of stay and treatment outcomes must examine the individual treatment intensity and service components required by the youth and his/her unique addiction issues. Length of stay seems to vary considerably based on the type of program, the program's primary purpose, participant commitment to the full course of treatment (where participation was not mandatory), the individual substance(s) being used, and the program's drop-out rates, treatment outcomes and recidivism rates. No definitive optimal length of stay was found in the literature for youth with substance use issues.

Concurrent disorders

As was expected, the treatment of concurrent disorders associated with substance use issues was very prominent in the literature. The primary issues co-occurring with substance use discussed in the literature were various mental health problems (psychiatric disorders such as oppositional defiant disorder, conduct disorder, attention deficit/hyperactivity disorder, depression, and suicidal ideation) and youth being treated in the justice system. An extensive listing of references found through the search process has been developed is included.

Challenges to treatment

Three primary challenges to the effectiveness of substance use treatment for youth were identified.

1. Retention/attrition: Dropout rates as high as 50 to 67% were noted. Consequently, the analysis of treatment program effectiveness is compromised by the difficulties in retaining participants.
2. Access: Access involves physical geography and cultural, travel, and financial implications related to treatment.
3. Relevance: Treatment activities need to be designed to encourage participation and involvement of youth. The more the adolescent feels involved in treatment and that such treatment is relevant to his/her unique circumstances and needs, the more likely treatment will be effective.

Recommendations

Six recommendations are made as broad, systemic considerations based on the information gleaned from the literature.

Recommendation 1: Involvement of family

Family involvement in treatment was found to be a common theme across all treatment settings. The specific approach to that involvement (family therapy, dealing with parental substance use issues, family visits, etc.) depends on the unique elements of the treatment regime of each adolescent.

Recommendation 2: Critical factors

Any treatment services for youth with substance use issues must address negative environmental factors, enhance community interactions, and provide for ongoing treatment contacts for youth. A variety of options should be available, from basic help lines or conversations with counsellors, to structured therapy, to crisis interventions when needed.

Recommendation 3: Cultural elements of treatment

Treatment programs need to be able to respond to the individual cultural elements of youth.

Recommendation 4: Responsiveness to unique needs of the individual

Flexible services and treatment planning that can attend to the unique needs of the individual youth are required.

Recommendation 5: Treatment setting considerations

When planning the continuum of treatment services for youth, policy makers must carefully consider when, where and how residential services are used for treating adolescent substance abuse. Other treatment modalities may be just as effective for some youth.

Recommendation 6: Contribution to the body of research

AADAC is in an opportune position to contribute to this body of knowledge in a meaningful way. The lack of empirical research in this field limited the completeness of the analysis that could be conducted. By studying the impacts of treatment services, and in particular the two new youth treatment programs in Edmonton and Calgary, AADAC has the ability to become a leader in the academic realm of youth substance use treatment.

Further, specific attention should be paid to exploring further the relationship between concurrent disorders and approaches to treatment.

Implications for AADAC

General concepts in the treatment of youth

AADAC's current practice reflects all the elements of adolescent-specific treatment: a broad systemic approach, provided in a supportive and non-threatening environment, through individualized and varied treatment regimes.

Residential treatment for youth

AADAC provides residential treatment (both wilderness and urban-based) to those individuals who require the structure of inpatient treatment and offers outpatient treatment to those clients not requiring a residential component. By

continuing to offer both treatment options. AADAC can meet the needs of youth wherever they are, both geographically and in their recovery process.

Detoxification and stabilization for youth

There are many organizations that provide "shelter" or "drop-in" style detoxification services to youth, but AADAC is at the forefront of using an active social detoxification model and using that opportunity to engage youth in pursuing further treatment.

AADAC's use of this treatment modality among a youth population could contribute to the literature on this topic in the future through a review of the quality and effectiveness of AADAC's youth detoxification and stabilization treatment program.

Wilderness-based programming and experiential learning

AADAC is implementing these tools in its current programming and will be in a position to contribute information on this topic to the addictions treatment field.

Family-centred practice

AADAC continues to take a family-centred approach to the treatment of youth. AADAC believes that the family is the client, since the family is the primary influencing factor affecting the youth's development and progress in treatment.

AADAC currently involves the youth's family throughout the youth's treatment process. This includes: family work without the youth client, family work with the youth client, family weekend intensive treatment, and active family involvement at intake into treatment, during treatment and during the youth's transition to home.

In keeping with this belief, treating the family assumes that the dependence is not simply the problem of a young person involved in substance use but also the problem of that youth's family. AADAC believes that the treatment plan needs to be developed for both the youth and the youth's parents/guardians so that the treatment facilitates growth in the entire family system.

AADAC uses five types of family-focused treatment approaches. In its spectrum of treatment services, AADAC includes family therapists to provide families with all five types of treatment approaches, depending on the needs of the family.

AADAC also offers support groups available specifically for families of youth (for example, support [process] groups, drug information groups and parent skill development groups). These groups all contribute to the continuum of treatment AADAC offers to youth and families.

AADAC involves the families of youth clients in many aspects of the youths' treatment and will be in a position to contribute what it has learned regarding the outcomes of these family-centred approaches to the addictions field.

Overall implications for AADAC

Because AADAC is implementing programming that encompasses all of these elements (residential treatment, detoxification and stabilization, wilderness-based/experiential learning and family-centred practice), most of which are not well researched to date, AADAC is in a prime position to undertake research on all of the treatment modalities being used and report on the outcomes of each, thereby contributing valuable information to the addictions field.

AADAC must plan to gather the information necessary to adequately research its treatment methods for youth.

AADAC provides several treatment modalities to meet the wide-ranging treatment needs of its youth clients. By doing this, AADAC can address the treatment needs of a variety of youth in a variety of circumstances, thereby encompassing as many youth as possible in its continuum of treatment options.

Project overview

The Alberta Alcohol and Drug Abuse Commission (AADAC) is a leader in the provision of high quality substance use prevention, outpatient treatment, residential treatment, and detoxification programming. In order to ensure ongoing quality of services, it is important to regularly review developments in the research related to treatment efficacy and best practices in other jurisdictions. In 2003/2004, the majority of youth receiving AADAC treatment services were aged 13 to 17 (92%). Youth treated by AADAC used a variety of different substances (AADAC, 2004a). Cultural differences are also noted both in substance use and treatment approaches. AADAC's youth treatment services include

- information services through area offices for individuals, groups, and parents
- outpatient services through area offices for individual, parent and family counselling
- intensive day programs in Edmonton and Calgary (12-week programs for youth who cannot be effectively treated on an outpatient basis)
- residential detoxification (detox) and treatment programs in Edmonton and Calgary that focus on a planned, safe withdrawal from drugs with the option of follow-up treatment through either a wilderness-based program (Calgary) or an urban-based residential treatment model (Edmonton)

The youth detoxification and residential treatment programs are new to AADAC and were initiated in the fall of 2005. While the programs themselves are designed to be the same in both Edmonton and Calgary, administration of the programs differs. The Calgary-based programs are provided through contracts with two local youth service providers while the Edmonton programs are provided directly through AADAC. Further, the treatment options of wilderness-based and urban-based residential treatment were established in order to better respond to the individual needs of youth, including learning styles and need for other services to support the treatment (e.g., medical, mental health/psychiatry services).

AADAC has conducted a variety of studies related to the epidemiology of substance use among Alberta teens (AADAC, 2005; AADAC, 2004a; AADAC, 2004b; AADAC, 2003a; AADAC, 2003b). Clearly, studies such as The Alberta Youth Experience Survey (TAYES) indicate significant use by youth of alcohol, marijuana, and nicotine, as well as some use of other substances such as magic mushrooms and mescaline, inhalants, ecstasy, crystal meth, uppers, hallucinogens, cocaine, crack, downers, heroin or opioids, and steroids. While these youth may represent a minority of all youth, the severity of impact of these substances on a youth's growth and development is critical.

Many programs across Canada and internationally have been developed to address the variety of substance use issues among youth. A key question arises, however: how do service providers know that what they are providing is what should be provided? The *Youth Detoxification and Residential Treatment Literature Review* will inform AADAC's choices about its services in order to make the greatest impact on substance use among Alberta's youth and their families.

Project goal and objectives

Project goal

The goal for the *Youth Detoxification and Residential Treatment Literature Review* was to undertake a literature review related to the effective treatment of youth in a variety of treatment settings. This review provides information to AADAC regarding the research evidence presented in the literature as it pertains to the quality and effectiveness of treatment approaches for the youth population.

Project objectives

1. Identify, critique and document the evidence and best practices in the literature as they pertain to the appropriateness, effectiveness, feasibility, and quality of treatment approaches among a youth population, specifically examining treatment methods based in
   - residential setting
   - detoxification and stabilization setting
   - wilderness-based programming
   - experiential learning
   - family-centred practice

   The following three areas of interest are to be captured if able to be addressed within the scope of the project and presented in the literature.
   - best fit: which treatment approach is most effective with a given "type" of youth: the impact of a given approach on various types of youth
   - outcome and length of treatment: the relationship between what is most effective and efficient
   - concurrent disorders: studies that identify concurrent disorders to be noted for AADAC's future reference
2. Identify, critique and document the effects of these treatment approaches on the youth population.
3. Identify, critique and document the barriers and challenges to success for these treatment approaches.
4. Make recommendations to AADAC, based on a critique of the evidence and best practices identified in the literature, as to what approaches are best suited to treating youth. The Advisory Committee contributed information regarding the implications of this information for AADAC.

Literature review methodology

Literature search process

A systematic literature search was conducted to identify key published and unpublished literature (in English) discussing evidence of the effectiveness of residential, detoxification and stabilization, wilderness, experiential and family therapies for youth with substance use disorders.

To ensure efficiencies in the literature search process, the Cochrane Collaboration was initially searched, followed by searches of Medline and PsycINFO (to facilitate elimination of duplicate records across databases). Medline was searched via Dialog for articles and papers. Key concepts were searched using MeSH (Medical Subject Headings) and text words. PsycINFO was searched via Dialog for articles, papers, dissertations, and book chapters using PsycINFO subject headings and text words. Where subjects were well indexed (e.g., substance use, family therapy), only subject headings were used to increase relevance and precision and to ensure a manageable number of hits; where subjects were not as well indexed (e.g., evidence-based research, systematic reviews), key words were added to increase recall.

A selection of major library catalogues; grey area literature repositories; free Internet-accessible databases; and websites of government departments, think tanks, research institutes and other relevant organizations was searched for the grey area literature, which included books, reports, and unpublished material. A summary of resources searched and terminology used follows. Literature was selected for inclusion in the review based on examination of abstracts and indexing (subject headings) where available, and on full text or table of contents if accessible at no cost on the Internet. A complete search report can be found in Appendix A.

Search inclusion criteria

Search results included abstracts and cited references or bibliographies where available. A systematic examination of abstracts and subject headings or table of contents was conducted. Articles were selected for retrieval of full text based on their adherence to the agreed upon inclusion criteria:

- includes, but not necessarily limited to, youth aged 12 to 17 (thus allowing studies whose populations were beyond age 17 if researchers had analyzed their data for the youth population)
- is an evaluation or empirical study or review; that is, includes measures of quality or outcomes to allow a determination of quality and effectiveness (descriptions of approaches alone not to be included except for contextual information)

- has a sample size of five or more subjects (since individual or small group case studies do not provide scientifically rigorous information for determining quality, effectiveness, etc.).
- was published from 1995 to 2005 (for relevance to the current social and substance use environment)
- was published in English
- was delivered in Canada, the U.S., the United Kingdom, New Zealand or Australia (to ensure findings can be generalized to the Alberta context)

Upon reviewing the outcomes of this selection process according to the treatment approaches of interest, a secondary review of the search findings was conducted to determine if there were outstanding articles that would possibly fill gaps. A subsequent search specific to wilderness and experiential programs was conducted with an expansion of years of publication (to 15 years), sample size and population. As well, a review of references of selected papers (where available) was conducted in order to identify further possible articles.

Search terminology

Database-specific subject headings were used. Subject headings were exploded where possible to include narrower terms in the search. Textwords were used to search titles, abstracts, and full text as available. Search headings included residential, detoxification/detox, stabilization, wilderness, experiential, adventure, family-centred/family-focused, adolescent (12 to 17)/youth (12 to 17), substance abuse/substance use, addictions, youth counselling, best practices, effectiveness of intervention, systematic, evidence-based, and critical appraisals. A complete listing is included in Appendix A.

Exclusions

Documents were excluded from the study if they were considered to be

- aversive therapies (including punitive measures and degradation)
- general policy papers that did not describe a specific intervention
- studies whose primary focus was on treating a concurrent disorder; such documents were identified for AADAC's future reference
- cost-effectiveness appraisals
- articles not specifying an adolescent age range/outcomes

Summary of systematic review process

For the purposes of this review, a treatment was considered to be a best practice when evidence of effectiveness was presented in the findings of individual research or evaluation reports. The analyses and conclusions of related review articles were also considered.

Articles and documents that conformed to the criteria identified for the project were divided between three reviewers. A comprehensive data extraction chart was developed to inform the analysis process. The chart was pre-tested for completeness and consistency in data extraction—two reviewers completed the chart for the same two articles (one scientific, one from the grey area literature). A team discussion was held to identify revisions in the chart and to summarize how the required information would be presented most effectively. The revisions were made to the chart, and data extraction commenced. The procedure for assessing the quality of the study followed the guidelines developed by the Centre for Reviews and Dissemination (2001), and is summarized in the following table. For the purpose of the summary table presented below, Levels 1 and 2 were collapsed together as there is little relevance in the distinction between these levels for applied research.

Given the desire to include as much evaluative literature as possible, this level of evidence grid was used, as it is more adaptable to grey area literature than others. For example, Levels 3 and 4 cover controlled observational studies and observational studies without controls, which is where much grey area literature such as program evaluations fits. The advantage of this grid is that all evidence is considered while giving greater weight both to studies at higher levels of evidence (generally sounder designs) and to the level of rigour with which each study was conducted within each level of evidence. For example, an observational program evaluation without controls (Level 4) using validated instruments may be more useful than an experimental design (Level 1) that uses unvalidated instruments.

TABLE 1: HIERARCHY OF STUDY DESIGNS FOR STUDIES OF EFFECTIVENESS*

LEVEL DESCRIPTION	1. Experimental studies (e.g., randomized controlled trials with concealed allocation) 2. Quasi-experimental studies (e.g., experimental study without randomization) 3. Controlled observational studies 3a. Cohort studies 3b. Case-control studies 4. Observational studies without control groups 5. Expert opinion based on pathophysiology, bench research or consensus
DESCRIPTION OF SELECTED STUDY DESIGNS	**Experimental** A study in which some conditions, particularly decisions concerning the allocation of participants to different intervention groups, are under the control of the investigator: • *Randomized controlled trial*. Follow-up of participants randomly allocated to intervention or control groups, with a comparison of outcome rates during the time covered. Randomization (with concealment of allocation sequence) avoids bias because both known and unknown determinants of outcome are on average evenly distributed between intervention and control groups. • *Quasi-experimental*. A study in which the allocation of participants to different intervention groups is controlled by the investigator but the method falls short of genuine randomization and allocation concealment.
	Observational A study in which natural variation in interventions or exposure among study participants is investigated to explore the effect of the interventions or exposure on health outcomes: • *Cohort study*. Comparison of outcomes between participants who have received an intervention and a group that has not (i.e., not allocated by investigator) in a follow-up study. • *Case-control study*. Comparison of exposure to interventions between participants with the outcome (cases) and those without the outcome (controls). • *Cross-sectional study*. Examination of the relationship between disease and other variables of interest as they exist in a defined population at one particular time. • *Before-and-after study*. Comparison of findings in study participants before and after an intervention. • *Case series*. Description of a number of cases of an intervention and outcome (without comparison with a control group).

* Centre for Reviews and Dissemination. 2001. p. 5

As well, it was important to note that each type of study design has separate criteria to be conducted in a defensible manner. For example, there are guides for the review of program evaluation reports (e.g., Treasury Board Secretariat) that assess such things as the extent to which conclusions and recommendations are based upon the evidence presented in the evaluation report. Therefore, each type of study was assessed according to criteria relevant to that type of study. Experimental studies must then have adequate randomization procedures whereas quasi-experimental studies must adequately rule out alternate explanations. Each of these criteria, while critical for that type of study, is not applicable to the other type of study.

The template for data extraction and field guide is included in Appendix B and a chart summarizing the results of the comprehensive data extraction process is located in Appendix C. Data Extraction Results.

Search results

A total of 468 documents of potential interest was identified. When the search criteria were applied and duplicate citations removed, 77 documents were found to possibly meet study selection criteria. Following search descriptor refinements and manual screening of abstracts, reference lists and subsequent articles, a total of 26 articles qualified for analysis. Among these, nine articles related to the residential setting, 12 articles qualified in the "family-centred approaches" area, there were two wilderness and two experiential setting articles, and seven studies qualified under an "other" category (note that sometimes one article discussed more than one treatment setting). No articles specifically describing detoxification and stabilization programs met the criteria. Note that a number of Substance Abuse and Mental Health Services Administration (SAMHSA) model programs were excluded from the review when the original papers were available. Approximately 20 general documents were reviewed that fell under the category of program descriptors, theory or opinion (related to youth and/or adult treatment), which supplements the analytical findings; these articles are not included in Appendix C.

Limited qualitative or quantitative data related to program/intervention effectiveness for the areas of interest in this study were found in the literature. Specifically, no programs related to detoxification and stabilization interventions were located within the criteria of this study. Information related to areas of wilderness interventions was very limited and often focused more on concurrent disorders (such as conduct disorders, mental health or justice) or were punitive in nature. Consequently, these fell outside the scope of this review. Similarly with experiential interventions, limited information was found specific to this treatment approach, but experiential elements were found to be relevant in a number of articles categorized under another, primary setting.

The limited availability of empirical evidence related to efficacy of the treatment approaches for youth substance users was a similar outcome to that of other researchers (Dell et al., 2003, Duncan, 2000; Health Canada, 2001; Rowe et al., 2003; United Nations Office on Drugs and Crime [UNODC], 2004; Vaughn & Howard, 2004). Much of the research related to substance use and addictions has been conducted on adult populations, including many of the general program and theoretical documents. The fact that other reviewers also found limited studies related to the issue of treating youth substance use validates the search process and the number of articles considered in this review.

Findings

The information presented in each treatment setting section provides the overall general findings from the literature, followed by the more detailed analysis of the evidence. A summary table of the articles reviewed in each section is provided. The detailed description of articles can be found in Appendix C.

Original studies of effectiveness

As noted above, a total of 26 original studies met the criteria to be included in the review. Since some studies addressed more than one setting, the results will be described according to setting. Individual studies may be included in the summary of more than one setting. Most of the residential studies were observational studies with or without controls (levels 3 and 4, respectively), as shown in the table below. However, most of these studies had adequate sample size for the study design based on the judgment of the review team. Many of the family-centred studies were Level 1 or 2 evidence (i.e., experimental or quasi-experimental studies). However, the majority of these studies had marginal or inadequate sample size, limiting their ability to detect effects of interventions.

TABLE 2: SUMMARY BY SETTING

SETTING	Total # of studies	Level of evidence				Sample size (reviewer's judgment based on requirements of study design)		
		1 or 2	3	4	5	Adequate	Marginal	Poor / not stated
R = residential	9	1	3	5	0	6	1	2
D = detoxification/stabilization	0	0	0	0	0	0	0	0
W = wilderness	2	1	0	1	0	1	0	1
E = experiential	2	1	1	0	0	1	0	1
F = family-centred	12	8	2	2	0	4	2	6
O = other*	7	4	3	0	0	4	0	3

Note: Studies with multiple levels of evidence (based on more than one study design employed) are categorized as the highest level.

* Studies that included treatment settings other than those identified for this review (e.g., school setting, community/outreach component).

Overall, based on the level of evidence and sample size, the quality of most articles reviewed was good. Additional comments on study rigour are noted on a study-by-study basis in Appendix C. Vaughn and Howard (2004) also found high methodological quality, standardized interventions and appropriate statistical analysis in their review. Thus, much of the limited work that is known to exist has been assessed, here and elsewhere, as being of good quality.

Another positive feature of many of the studies reviewed was the use of standardized and validated instruments for data collection. Many studies included a range of instruments and some studies used other sources of data such as urine testing to validate self-reported data.

A major limitation (in addition to the small number of studies meeting the review criteria) was the complex nature of many of the studies included in the review. For example, in many studies, the interventions are multi-faceted and involve several treatment approaches, within or across settings. Therefore, it is not clear which factors (the setting, treatment approach, specific interventions, etc.) led to the results obtained.

Furthermore, none of the reviewed studies had among their goals the intent to assess the effectiveness of treatment setting. As well, many did not compare the treatment group(s) to a control group. Furthermore, the duration and intensity of treatment varied (e.g., Jainchill, Hawke, DeLeon, and Yagelka [2000] reviewed one-year post-treatment whereas Morehouse and Tobler [2000] included a post-test at program exit only with no follow-up), thus making it difficult to assess the effectiveness of interventions in a particular setting.

Another limitation was that most studies were U.S.-based and many involved cultural groups not prevalent in Alberta; results were thus not as easily generalized to the Alberta context.

General

There is a common belief presented in the literature that youth substance use programs cannot use the same treatment approaches as are used for adults (Dauber, 2004; Federation of Families for Children's Mental Health [FFCMH] & Keys for Networking Inc., 2001; Health Canada, 2001; Obermeier & Henry, 1989; Terjanian, 2002). Treatment activities and expectations are often found to be in conflict with the social and cognitive development of adolescents and therefore are not likely to have positive, long-term outcomes. Further, treatment needs to encompass elements related to family, school, peers, and community as well (AADAC, 2003b; Dauber, 2004; Rowe et al., 2003; Terjanian, 2002). One author defines the approach needed as "habilitative" versus "rehabilitative," in that adolescents need to learn the necessary coping and decision-making skills to live a drug-free life (Obermeier & Henry, 1989). Health Canada (2001) suggests that this difference is also evident in how to engage adolescents into programs. For example, the program environment needs to be non-threatening and caregivers need to be prepared to "go where adolescents are" emotionally, geographically, psychologically, and developmentally, in order to engage their participation. This was particularly important when adolescents had concurrent disorders (FFCMH & Keys for Networking Inc., 2001; Slesnick, Meyers, Meade, & Segelken, 2000). To engage adolescent clients, service providers must understand the unique needs

and preferences of this age group, and come up with creative treatment solutions.

Treatment approaches were often not presented as unique services independent of each other. For example, taking a family-centred approach to treatment was a common theme across all settings. It has also been stated that how and where family involvement in treatment should occur depends in part on the level of family dysfunction and family substance use (Dell et al., 2003). Given the interrelatedness of such programs, it was particularly difficult to segregate the five treatment settings (residential, detoxification and stabilization, wilderness, experiential, family-centred) from one another for independent analysis. Therefore, overlap between treatment settings does exist in this findings section.

Residential

Residential programs are most appropriate when clients have a significant level of dysfunction as a result of their substance use *and* the community/peer environment is not conducive to intensive treatment activities (Dell et al., 2003; UNODC, 2002). Generally, people in residential treatment are no longer experiencing the physical or emotional effects of the substances.

The goals of residential treatment are to prevent the return to active substance use, provide youth with healthy alternatives to substance use, help them to understand and address the underlying factors supporting the substance use, and teach them how to deal with cravings, resist pressures to use substances, and make more healthy decisions (Dell et al., 2003).

Access to medical services was found to be important in any inpatient program (Health Canada, 2001; Obermeier & Henry, 1989). A complete physical health assessment is considered to be a best practice before engaging in treatment (Health Canada, 2001).

It is difficult to make recommendations related to residential treatment at this point. Vaughn and Howard's review (2004) assessed residential services as a "Level C" intervention, where the evidence of effectiveness was negligible or negative and/or study designs were less strong. Because residential programs encompass a multitude of individual treatment interventions in that setting (such as detoxification, individual and family therapy, and interpersonal skills development), a review of the efficacy of each intervention would be necessary to truly understand the overall effectiveness of residential treatment.

Of the nine programs included in this review that involved residential settings, five directly assessed the effectiveness of interventions aimed at youth.

In a well-designed Level 3 study with large sample size, Sealock, Gottfredson and Gallagher (1997) considered a residential Alcoholics Anonymous (AA) program (steps one through nine of the 12 steps of AA) with aftercare

components and found significantly lower drug use and delinquent behaviour at two months post-treatment but not in subsequent recidivism at 18 months post-treatment.

Winters, Stinchfield, Opland, Weller and Latimer (2000) reported the results of a Level 3 study (unfortunately with marginal sample size) that showed that residential and outpatient treatment using the Minnesota Model (medical and social treatment approaches) was associated with reduced drug use among program completers. The change was smaller at 12 months post-treatment than at six months post-treatment. The residential and outpatient groups showed similar decreases, leading the authors to question the cost-effectiveness of residential treatment.

In a Level 3 study with adequate sample size, Morehouse and Tobler (2000) showed that a variety of individual services and referral to other services (Residential Student Assistance Program) was effective at reducing alcohol and drug use among youth.

A Level 4 study with adequate sample size by Jainchill et al. (2000) showed that completion of treatment in residential therapeutic communities resulted in reduced alcohol and drug use, although smaller decreases were also noted in non-completers.

Similarly, a Level 4 study (with limited sample size--even for a qualitative study) by Currie (2003) showed that participants receiving greater length of interventions in the Home Base program (medical and social treatment approaches) showed greater decreases in alcohol and other drug (AOD) use than did those receiving shorter intervention. Confrontational or punitive interventions were deemed to be alienating to participants in this study.

Overall, these five studies show treatment in residential setting to be effective, although gains diminished over time (where assessed) and one study showed similar gains in residential and outpatient settings. Generally, findings were similar despite differences in treatment approaches and study rigour.

Four other residential studies explored other treatment elements related to this setting. Aktan, Kumpfer and Turner (1996) examined the effect of parenting interventions, while Shane, Jasiukaitis and Green (2003) studied a structured living environment involving individual and group therapy to address family issues. Orlando, Chan and Morral (2003) examined factors related to treatment retention and Dobkin, Chabot, Maliantovitch and Craig (1998) described characteristics of program completers.

TABLE 3: RESIDENTIAL TREATMENT SUMMARY

ARTICLE	TARGET GROUP	DESCRIPTION OF TREATMENT
Sealock et al. (1997)	Exact ages not specified Both genders Substances not specified (although urine test results listed THC, cocaine, morphine and PCP) Mandatory participation	Residential program: Males and females committed to single-sex facilities for an average of 11 weeks (males) and 13 weeks (females). Youth completed steps 1 to 9 of the Alcoholics Anonymous recovery program, were required to attend at least six support group sessions per week, and were offered a variety of other treatment resources. Also offered were academic, recreational and vocational educational programming; therapeutic recreation; work assignments; social activities. Ranged in length from six to eight weeks; youth were then either released to their community or administered additional aftercare services. Aftercare services: Aftercare services were intended to alter family conditions (e.g., discipline, enabling behaviours), increase youth involvement in productive community activities, and reduce negative peer pressure.
Winters et al. (2000)	Ages 12–18 Both genders Marijuana, alcohol, amphetamines, and other Voluntary participation 82% history of current co-existing psychiatric disorders (attention deficit/hyperactivity disorder, conduct/oppositional defiant disorder and major depression)	Residential treatment included residential program plus six months of outpatient continuing care. Non-residential treatment was outpatient care. Both groups received the Minnesota Model, which combines the principles of the 12 steps of AA and basic principles of psychotherapy. Interventions included group therapy, individual counselling, family therapy, lectures about the 12 steps of AA, AA-based reading and writing, assignments, school study sessions, occupational and recreational therapy. Families attended sessions with other family members one evening per week.
Morehouse & Tobler (2000)	Street youth aged 13–19 Both genders Alcohol and other drugs Voluntary participation	Initial assessment by trained, supervised specialist Six to eight 45-minute sessions on substance use, family problems and stress Outreach activities to involve youth Weekly (for eight weeks) independent 45-minute group counselling for youth with drug-abusing parents Individual counselling (45-minute sessions) Referral to outside alcohol and drug programs; facilitation of involvement in 12-step programs Residential task force to change norms and culture of facility (30–45 minutes weekly)
Jainchill et al. (2000)	Under age 18 Both genders Marijuana, alcohol, inhalants, hallucinogens, crack, cocaine, heroin, other opiates, methadone, methamphetamines and other stimulants, barbiturates, sedatives and tranquillizers Voluntary participation	Residential therapeutic communities. Treatment must accommodate developmental differences, focusing on correcting maladaptive behaviours and attitudes, facilitating maturation and socialization, education and vocational training. Treatment is sequenced in phases or stages. Passage from one phase to the next requires meeting specified criteria. One year post-treatment beginning the day person left treatment.

TABLE 3: RESIDENTIAL TREATMENT SUMMARY (continued)

ARTICLE	TARGET GROUP	DESCRIPTION OF TREATMENT
Currie (2003)	Youth Both genders Wide variety of substances Voluntary participation Wide range of co-occurring emotional issues	Home Base is a hybrid program, combining features of medical and "social" models of treatment. Psychiatric evaluation at admission, staff psychiatrist supervises treatment plans, and clients receive medical screening throughout stay. Operates as a modified therapeutic community providing group therapy, confrontation groups, 12-step approach and working with families.
Aktan et al. (1996)	Ages 6–12 Both genders Substances not specified Voluntary/mandatory participation not specified About half had experienced significant school failure	12 weeks Three self-contained courses: • parent training course • children's skills training • family skills training Program brought all members of the family together for at least one evening a week.
Shane et al. (2003)	Ages 13–19 Both genders Marijuana, alcohol, and other Voluntary participation	Structured living environment, individual and group therapy, interventions to address family issues. Safe milieu. Los Angeles group: Long-term residence group (9–12 months) Oakland groups: Short-term group (28–45 days) and long-term group (3–12 months) Tucson group: 30-day stay, then step-down aftercare
Orlando et al. (2003)	Ages 13–17 Both genders Substances not specified Volunteered for research but mandated to program by courts (juvenile detention) *Participants were a subset of youth in the Adolescent Outcomes project conducted within RAND's Drug Policy Research Center.	Examine the role of treatment program and process effects on retention. Identify the treatment process predictors of retention among a sample of court-referred adolescents.
Doblin et al. (1998)	Average age 15.5 Both genders Substances not specified, but those addicted to heroin were excluded Voluntary participation	One-year program: two months as inpatient, three months as outpatient, seven months in aftercare. Parents are invited to take part in family therapy. Educational services for adolescents are integrated into the outpatient unit. Inpatient program is subdivided into three phases: Integration, Treatment Planning, and Taking Responsibility.

Detoxification and stabilization

Detoxification and stabilization were found to be one component of residential treatment services and therefore are included here as a subsection of residential treatment.

Detoxification and stabilization services are geared towards addressing medical issues, attaining abstinence, and assessing motivational, cognitive and behavioural change strategies. The goal is to attend to the physiological and emotional elements that result from a complete withdrawal from substances. As an individual course of treatment, it is not likely to achieve long-term recovery but rather is most appropriate as a first phase or preparation for treatment (UNODC, 2003; UNODC, 2002). It is not surprising, therefore, that there were no evidence-based articles identified through this process that were unique to detoxification and stabilization programs.

Family-centred practice

Family participation in treatment activities was found in the literature to be a significant element in the success of treatment (Dauber, 2004; Duncan, 2000; FFCMH & Keys for Networking Inc., 2001; Health Canada, 2001; Obermeier & Henry, 1989; Rowe et al., 2003; Slesnick, et al., 2000; Terjanian, 2002; Vaughn & Howard, 2004). Family-centred practice as a treatment approach is difficult to define succinctly, as it can involve activities ranging from letter writing and visits, to direct parent involvement in certain elements of treatment related to coping with the addiction, to intensive individual and family therapy. Therefore, a variety of subcategories were found within this treatment approach; however, a detailed analysis of each family therapy practice was beyond the scope of this review.

Where reference was made to detoxification programs (usually within a residential program), contact was often limited to telephone calls until closer to the completion of that component of treatment. Specific impacts were found in developing communication skills between parents and substance abusing adolescents (Terjanian, 2002). Engagement of the family in treatment was as important as engagement of the adolescent (Duncan, 2000; Rowe et al., 2003; Slesnick et al., 2000). Overall, the consistent theme was that family involvement is critical to supporting continued abstinence and assisting the adolescent in difficult decision-making in the future.

Implications for treatment and the need to involve parents in youth treatment activities are further compounded by the fact that research is now able to show a more defined genetic link between alcoholism among family members (el-Guebaly & Quickfall, 2004; UNODC, 2002).

The literature is filled with documents related to family-centred treatment; however, much of that literature was descriptive in nature. As well, a variety of family therapies was identified in the literature; cognitive behavioural therapy

and multi-dimensional family therapy (Dauber, 2004; Rowe et al., 2003; Vaughn & Howard, 2004) are evidence-based treatments found to have positive effects when treating youth who use substances.

In this review, eight family-centred studies directly assessed the effect of the intervention. All eight were Level 1 studies but only two of eight were judged by our review team to have adequate sample size for the study design. The results of these two studies are as follows.

Dennis et al. (2004) examined five approaches in the Cannabis Youth Treatment study and found no significant differences between any of the approaches: motivational enhancement treatment/cognitive behavioural therapy (five versus 12 sessions); family support network (FSN); adolescent community reinforcement approach (ACRA); and multi-dimensional family therapy (MDFT). All approaches were found to be effective in decreasing substance use before and after analysis (Level 4 comparison). However, about two-thirds were still reporting substance use at 12-month follow-up.

The Substance Abuse and Mental Health Services Administration (SAMHSA, n.d.-a) identified brief strategic family therapy (BSFT) as a model program and summarized research indicating that it led to reductions in acting-out behavioural problems, marijuana use, and association with anti-social peers, as well as to high rates of retention of participants in the program.

The results of the six Level 1 family-centred studies with marginal or inadequate sample size were as follows.

Waldron et al. (2001) showed improvements in marijuana use at four and/or seven months using cognitive behavioural therapy, functional family therapy, combined therapy of the two previous approaches, and psycho-educational group therapy.

Liddle et al. (2001) showed greater reduction in drug use and improved school performance for youth in multi-dimensional family therapy (based on family therapy and psychotherapy dynamics) than in multi-family educational intervention (a structured psycho-educational focus) or adolescent group therapy (a peer-based intervention) although the limited sample size brings this comparison into doubt.

Similarly, Liddle, Rowe, Dakof, Ungaro and Henderson (2004) showed multi-dimensional family therapy to be more effective than peer-based treatment in terms of association with delinquent peers, externalizing symptoms, family cohesion, cannabis use, and alcohol use.

Hogue, Liddle, Dauber and Samuolis (2004) reported that targeting family-based content and themes was predictive of positive treatment outcomes regardless of whether multi-dimensional family therapy or cognitive behavioural therapy was used, although very limited sample size restricts confidence in this assertion.

Henggeler, Pickrel and Brondino (1999) reported a decrease in alcohol, marijuana and other drug use with multisystemic therapy at six months post-treatment, although these gains were not maintained at 12 months following treatment.

Finally, Hogue, Liddle, Becker and Johnson-Leckrone (2002) reported that the multi-dimensional family prevention model showed treatment effects in terms of improved self-concept, improved bonding at school and reduced peer anti-social behaviour.

Four other Level 3 or 4 family-centred therapies focused on the effect of parenting interventions (Aktan et al., 1996, as noted in the residential studies above), dealt with aspects of parent-child or family communication that predict drug use treatment outcomes (Terjanian, 2002), examined perceptions of the process of delivering multi-family and peer group aftercare program (Duncan, 2000), and analyzed the treatment focus in multi-dimensional family therapy and cognitive behavioural therapy (Dauber, 2004).

Overall, family-centred approaches appear to be effective, although which particular approach is effective, whether gains can be maintained, and whether family involvement is necessary, are less clear.

TABLE 4: FAMILY-CENTRED PRACTICE SUMMARY

ARTICLE	TARGET GROUP	DESCRIPTION OF TREATMENT
Dennis et al. (2004)	Ages unknown Both genders Cannabis (including hashish, marijuana, blunts and other forms of tetrahydrocannabinol) Voluntary participation Mental health and justice	Five intervention models: • motivational enhancement treatment/cognitive behavioural therapy, five sessions (MET/CBT5): two individual MET sessions and three group CBT sessions; total duration six to seven weeks; teaches basic skills (refusing cannabis, establishing a social network supportive of recovery, developing a plan for pleasant activities to replace cannabis-related ones, coping with unanticipated high-risk situations, problem solving, and relapse recovery if necessary). • motivational enhancement treatment/cognitive behavioural therapy, 12 sessions (MET/CBT12): two individual MET sessions and 10 group CBT sessions; total duration 12–14 weeks; additional CBT sessions teach coping skills and address problem solving, anger management, communication skills, resistance to craving, depression management, and management of thoughts about cannabis. • family support network (FSN): used MET/CBT12 for adolescents, along with six parent education group meetings (to improve parent knowledge and skills), four therapeutic home visits, referral to self-help support groups, and case management; parent education provided information on adolescent development and parent's role, substance abuse/dependence, family development and functioning, etc.; home visits focused on initial assessment and motivation building, family roles and routines, etc. • adolescent community reinforcement approach (ACRA): 10 individual sessions with adolescent, four sessions with caregivers (two with whole family), with limited case management; total duration 12–14 weeks; adolescent sessions incorporate operant learning, skills training and a social systems approach; core procedures used are functional analyses to identify antecedents and consequences of substance use and pro-social behaviour; two parent sessions include review of important parenting practices, increasing positive communication in the family, problem solving, etc.; two sessions bring parents and adolescents together to practice communication and problem solving. • multi-dimensional family therapy (MDFT): composed of 12–15 sessions (six with the adolescent, three with parents, and six with the whole family) in three phases. ◦ setting the stage (engaging adolescents, engaging parents, etc.) ◦ working the themes for adolescents (trust/mistrust, abandonment and rejection, etc.) and families (preparing for parent/adolescent communications, shifting from high conflict to affective issues, etc.) ◦ sealing the changes (preparing for termination, preparing for future challenges, etc.)
SAMHSA (n.d.-a)	Ages 6–17 Both genders Only marijuana noted Voluntary/mandatory participation not identified	Step 1: Organize a counsellor family work team. Step 2: Diagnose family strengths and problem relations. Step 3: Develop a change strategy to capitalize on strengths and correct problematic family relations. Step 4: Implement change strategies and reinforce family behaviours.

TABLE 4: FAMILY-CENTRED PRACTICE SUMMARY (continued)

ARTICLE	TARGET GROUP	DESCRIPTION OF TREATMENT
Waldron et al. (2001)	Ages 13–17 Both genders Illicit drugs: marijuana use; excluded were youth abusing only alcohol, or alcohol and tobacco Mandated participation Delinquent behaviour, anxious/depressed, attention difficulties, externalizing behaviour, internalizing behaviour	Cognitive behavioural therapy (CBT), functional family therapy (FFT), combined individual and family therapy (joint), group intervention CBT skills training program: • modelled after Monti's coping skills training programs (1989) and Kadden's Project MATCH (1995) • designed to teach self-control and coping skills to avoid substance use • two-session motivational enhancement intervention, and 10 skills modules (e.g., communication training, problem solving, peer refusal, negative mood management, social support, work- and school-related skills, relapse prevention) FFT program: • systems-oriented, behaviourally based • overall goal: to alter dysfunctional family patterns that contribute to youth substance use • applied in two phases: first focuses on engaging families in treatment process and enhancing motivation for change (family assessment done during this phase); second focuses on effecting behaviour changes in the family Combined FFT and CBT program: • Youth were assigned CBT therapists; families were assigned FFT therapists. • Youth attended two sessions weekly for a total of 24 sessions. Psycho-educational program: • modelled after tertiary prevention education strategies widely used for youth substance abuse programs • provided information about alcohol and other drugs, explored expectancies and consequences of substance use, provided opportunities for youth to identify self-esteem-enhancing alternatives, and included skills training (e.g., assertiveness and refusal skills)
Liddle et al. (2001)	Ages 13–18 Both genders Alcohol, marijuana Voluntary participation	MDFT treatment, MEL treatment and AGT treatment respectively. Each treatment was based on their respective manual. Each treatment group received 14–16 sessions. Duration: Five to six months. MDFT (multi-dimensional family therapy) is based on family therapy and psychotherapy dynamics. MEI (multi-family educational intervention) has a structured psycho-educational focus. AGT (adolescent group therapy) is a peer-to-peer intervention.
Liddle et al. (2004)	Ages 11–15 Both genders Substances unspecified Voluntary participation Conduct disorder, ADHD, depressive disorder	Peer group treatment: Peer-based group treatment is based on the premise that positive peer influences can buffer young adolescents from drug abuse and provide positive behaviour alternatives to substance abuse. • 90-minute session twice per week for 12–16 weeks • MDFT sessions primarily in the home • CBT sessions in clinic • Duration: 12–16 weeks

TABLE 4: FAMILY-CENTRED PRACTICE SUMMARY (continued)

ARTICLE	TARGET GROUP	DESCRIPTION OF TREATMENT
Hogue et al. (2004)	Mean age 15.2 Both genders Marijuana, alcohol, other substances Voluntary/mandatory participation unspecified Conduct disorder, oppositional defiant disorder, mood disorders	One group received MDFT and one group received CBT. Cases in both groups averaged 16.1 sessions; no difference in length of case. Office-based weekly session provided to each group.
Henggeler et al. (1999)	Ages 12–17 Both genders Poly-substance users including alcohol, marijuana, and other Voluntary participation Conduct disorder, oppositional defiant disorder, major depression, overanxious, agoraphobia, social phobia, simple phobia, attention deficit disorder	A family-based intervention: multisystemic therapy (MST). Treatment integrity supported by weekly 1.5-hour clinical groups supervision, periodic review of cases and interventions, review of therapists' notes and contact logs, and audiotape of all face-to-face and telephone contacts. Treatment: Therapist assigned and available 24-7. Treatment delivered in home and community setting by therapist. Low therapist caseload (four to five cases) assured availability and flexibility. Therapist provided needed service in lieu of consultation to outside providers. Shared responsibility between therapist and family for clinical outcomes.
Hogue et al. (2002)	Ages 11–14 Both genders Alcohol, marijuana Voluntary participation Adolescents at high risk for substance abuse and conduct disorder; school truancy and delinquency	Multi-dimensional family prevention model (MDFP) Customized prevention planning for families for preventive intervention with adolescents at high risk for substance abuse and conduct disorder; seeks to reduce risk factors and enhance protective factors in four domains of functioning: • adolescent self-competence • family functioning • adolescent school involvement • adolescent peer associations All services provided in a one-to-one setting; session content varies case by case and session to session; 15–25 sessions held over a three- to four-month period. Adolescent module and parent module focus on adolescent's status and parenting practices respectively; interactional module provides context for families to interact in new ways; extra-familial module seeks to develop collaboration among all social systems to which the adolescent belongs.
Aktan et al. (1996)	Ages 6–12 Both genders Substances not specified Voluntary/mandatory not specified School difficulties	12 weeks of treatment Three self-contained courses: • parent training course • children's skill training • family skills training Program brought all members of the family together for at least one evening a week.

TABLE 4: FAMILY-CENTRED PRACTICE SUMMARY (continued)

ARTICLE	TARGET GROUP	DESCRIPTION OF TREATMENT
Terjanian (2002)	Ages 14–21 Both genders Substances unknown Voluntary participation Justice history	Weekly family therapy (average 11–13 sessions) and parent groups First assessment within one to two weeks of admission; follow-up 15 months after initiation of treatment. Duration: Six months
Duncan (2000)	Age unknown Both genders Cannabis, alcohol or hallucinogens Voluntary participation Depression or attention deficit/hyperactivity disorder	Once per week aftercare program (multi-family and peer group with random drug testing) used to explore participants' perspectives of their treatment experiences in a family-based adolescent substance abuse treatment program.
Dauber (2004)	Ages 13–17 Both genders Alcohol, marijuana, other substance dependence Both voluntary and mandated participation Justice, mental health (externalizing disorder, depressive disorder, internalizing disorder, conduct disorder, oppositional defiant disorder)	Multi-dimensional family therapy (MDFT) Cognitive behavioural therapy (CBT)

Wilderness-based programming and experiential learning

Wilderness forms of treatment have been actively used for many years and are cited as an important service option for teaching substance-using youth the importance of group dynamics, teamwork, self-mastery, and development of good relationships with themselves and others (Obermeier & Henry, 1989). Such programs are based on experiential learning concepts identified below that rely on real-life skill mastery, often involving a great deal of physical activity. Information in the literature related to the measured impact of wilderness programs was limited.

The term "experiential" is not consistently defined within the literature. Clearly there was support for the need to meet adolescents "where they are" with regard to their current environment (home, community, stressors, developmental levels, etc.) and for the idea that learning through action would be more effective than theory (Dell et al., 2003; FFCMH & Keys for Networking Inc., 2001; Health Canada, 2001; Karyl, 1998; Obermeier & Henry, 1989; SAMHSA, n.d.-a). Therefore, prevention and treatment approaches found in the

literature often cited the importance of an educational element (Dell et al., 2003; Obermeier & Henry, 1989; SAMHSA, n.d.-c).

In the articles reviewed, experiential learning included physical activities, group co-operative activities, and activities that helped participants learn to develop problem-solving and other coping skills. For instance, one of the common themes found was that many youth using substances did not participate regularly in healthy social and recreational activities (Health Canada, 2001; Obermeier & Henry, 1989). However, physical activities provide the opportunity for adolescents to experience mastery, self-confidence, interpersonal co-operation and problem solving, as well as biologically improving their health and cognitive abilities to make appropriate decisions. Health Canada's best practice review (2001) identified a broad psycho-educational approach to be most effective when presented in a setting that was safe, fun and recreational.

Two wilderness and/or experiential programs were included in this review.

A Level 4 study with unreported sample size by SAMHSA (n.d.-b), focused on the effect of individual, peer, family, school, and community experiential games and other activities with up to 18 months of outcome follow-up. It reported delayed onset or reduction of alcohol, marijuana and illegal drug use.

Russell (2001) reported on a large-sample, Level 4 study of eight programs that are members of the Outdoor Behavioral Health Care Industry Council. Interventions included an empathetic approach to self-discovery in a wilderness challenge. There was a reported reduction in severity of emotional and behavioural symptoms.

Overall, there is not enough existing research to allow conclusions to be drawn about wilderness or experiential approaches at this time.

TABLE 5: WILDERNESS-BASED AND EXPERIENTIAL LEARNING SUMMARY

ARTICLE	TARGET GROUP	DESCRIPTION OF TREATMENT
SAMHSA (n.d.-b)	Ages 5–14 Both genders Substances not specified Voluntary participation	Interventions include individual, peer, family, school and community. Experiential games, one after-school session per week for two to three hours, one daylong activity per month, one seven-day leadership camp, four community service learning projects per year, four potluck dinners or other family events. Development of social and emotional competence through experiential activities that encourage critical thinking, problem solving and increased risk levels that challenge youth to develop intra- and interpersonal skills. Relies on American Indian traditional values Duration: 25–52 weeks
Russell (2001)	Ages 12–20 Both genders Cannabis dependence, cannabis abuse, alcohol dependence and abuse, amphetamine dependence Voluntary participation Behavioural disorders, mood disorders (depression, dysthymia, adjustment disorder, bipolar disorder, oppositional defiant disorder)	Outdoor behavioural health-care programs stresses empathy and self-discovery. Wilderness challenge provides an alternative for resistant adolescents unwilling to commit to traditional psychological treatment because of the stigma associated with it. Duration: 21–180 days (average 38 days)

Other treatment settings

Three of the studies in the "other" category were described above (Dennis et al., 2004; Sealock et al., 1997; Waldron et al., 2001). The additional four studies are as follows.

SAMHSA (n.d.-d) reported on a large-sample, Level 1 study of behavioural modification, in-school curricula, and skill development for youth at risk for substance abuse. Results showed a modest reduction in cigarette use, marijuana use, hard drug use and, to some extent, alcohol use.

McGillicudy, Rychtarik, Duquette and Morsheimer (2001) reported on a very small sample experimental study of an eight-week parent-training program whose main effects were on coping and psychological functioning of parents. Effects on their children were less clear.

A Level 3 observational study in two U.S. states (SAMHSA, n.d.-e) did not differentiate by age but reported that there were community-level reductions in self-reported drinking and related behaviours. However, the extent to which it is reasonable to attribute these effects to the intervention is not clear. The program used a set of environmental interventions entitled Alcohol Access, Responsible Beverage Service, Risk of Drinking and Driving, Underage Alcohol Access, and Community Mobilization.

Finally, SAMHSA (n.d.-c) reported on a large-sample, Level 3 and 4 study of a school-based prevention program with improved risk factors although the study was based on self-reported intentions.

Together these studies raise the possibility of improving youth outcomes through parental training, school-based approaches and community-based approaches. No definitive conclusions, however, can be drawn from the current literature.

TABLE 6: OTHER TREATMENT SETTINGS SUMMARY

ARTICLE	TARGET GROUP	DESCRIPTION OF TREATMENT
SAMHSA (n.d.-d)	Ages 14–19 Both genders Alcohol, illegal drugs, tobacco Voluntary participation	Behavioural modification, in-school curricula, skill development Duration: 12 sessions over four to six weeks
McGillicuddy et al. (2001)	Ages 12–21 Both genders Alcohol or illicit drugs (marijuana, sedatives, hallucinogens, inhalants, stimulants, opiates, powder and crack cocaine) Voluntary participation	Eight-week parent training program using the behavioural-analytic model for construction of skill training programs.
SAMHSA (n.d.-e)	All ages (does not differentiate out adolescents) Both genders Substances unspecified Voluntary participation	A multi-component, community-based program developed to alter alcohol use patterns in people of all ages (e.g., drinking and driving, underage drinking, acute "binge" drinking) and related problems. The program uses a set of environmental interventions: Alcohol Access, Responsible Beverage Service, Risk of Drinking and Driving, Underage Alcohol Access, and Community Mobilization
SAMHSA (n.d.-c)	Ages 5–17 Both genders Alcohol, tobacco, illegal drugs Universal participation	Life/social skills treatment. Task-oriented family education sessions to improve family interaction. Peer resistance education. Peer norms against alcohol, tobacco and illegal drug use. Classroom drug education. Classroom-based skills development. After-school activities. Media education to counter alcohol and tobacco advertising. Duration: Five to 24 weeks

Impacts of treatment on the youth population

A further analysis was conducted related to the following questions:

- Are there treatment approaches that are identified as a "best fit" for a certain population of adolescents?
- Is there a relationship between treatment outcomes and length of stay?
- Are there any concurrent disorder themes found in the literature?

A few general comments may be relevant in considering these questions further. However, a definitive answer to these queries cannot be made based on the information gathered.

Best fit

Assessing the individual elements associated with a youth's substance use is vital to determining the most appropriate treatment components and approach, as there are no agreed-on perspectives regarding what treatment is best for whom, when or where (Duncan, 2000; Health Canada, 2001; Obermeier & Henry, 1989; Rowe et al., 2003). A variety of treatment options needs to be available as well as a subsidiary listing of partners to support other areas influencing the effectiveness of treatment (e.g., housing, employment, psychiatric services). For treatment to be effective, it must be individualized to the client's needs, must be gender-responsive, must deal with family dynamics, and must address the circumstances that the client comes from and will return to (AADAC, 2003b; Dauber, 2004; Duncan, 2000; Dell et al., 2003; Health Canada, 2001; Rowe et al., 2003; Slesnick et al., 2000; UNODC, 2004).

Length of stay and treatment outcomes

The relationship between length of stay (LOS) and treatment outcomes must examine the individual treatment intensity and service components required by the youth and his or her unique addiction issues. Length of stay seems to vary considerably based on the type of program, the program's primary purpose, participant commitment to the full course of treatment (where participation was not mandatory), the individual substance(s) being used, and the program's drop-out rates, treatment outcomes and recidivism rates. A complex matrix of all of these variables would be necessary to map out the interactions. While there are perspectives on effective LOS and treatment for adults (UNODC, 2003) no definitive optimal LOS was found in the literature for youth and in fact, one study found no significant difference between four-week, six-week or longer-term treatments (Dell et al., 2003).

Reference to LOS was found primarily in those articles or reports discussing residential care. Dell et al. (2003) attempted to analyze this specific topic for residential treatment for Aboriginal youth solvent abusers. However, the

outcome of their study was limited in that specific information on the target population was sparse. The efficacy of the LOS presented is therefore questionable.

Hsieh et al. (as cited in Dell et al., 2003) reported that a six-month LOS in a residential treatment program resulted in significant positive outcomes; this was not the case, however, for the 12-month application. The factors identified to have the greatest impact on treatment outcomes were the inclusion of after-care programs such as Alcoholics Anonymous (AA), Narcotics Anonymous (NA), Al-Anon, Alateen, and other self-help support groups. However, the severity of the addiction needs to be considered and is a complicating factor in defining a "best" treatment LOS. For example, where behavioural and cognitive dysfunction occurred, a treatment regime specific to these issues could take between six months and two years (Dell et al., 2003).

Another theme found in the literature, related to residential treatment program length and effectiveness, was the need for ongoing follow-up or outpatient treatment (Dell et al., 2003; Health Canada, 2001; World Health Organization (WHO), 2004a; WHO, 2004b), which could last for as long as a year after treatment. In many cases, this was cited as a more important factor than the actual inpatient treatment element.

The process of detoxification was noted to require two to four weeks. With regard to wilderness approaches, the LOS ranges from 28 days to six months (Dell et al., 2003) and three- to six-month outpatient programs were identified (Health Canada, 2001).

Concurrent disorders

As was expected, the treatment of concurrent disorders associated with the substance use issues was very prominent in the literature. The primary issues co-occurring with substance use discussed in the literature were various mental health issues (such as oppositional defiant disorder, conduct disorder, attention deficit/hyperactivity disorder, depression, and suicidal ideation) and youth being treated in the justice system. The interrelationship between the disorder or delinquent characteristics and substance abuse resulted in many articles being screened out of this analysis. An extensive listing of references found through the search process has been maintained and is included in Appendix D for AADAC's future reference.

Challenges to treatment

Three primary challenges to effective substance use treatment for youth were identified.

Retention/attrition

One of the factors that seemed to affect treatment outcomes was the issue of attrition, either from parents removing their child from treatment, or the youth him or herself dropping out of treatment (Dell et al., 2003). Dropout rates as high as 50 to 67% were noted. Consequently, the analysis of treatment program effectiveness is made more difficult by the inability to retain participants. Further, when considering applying treatments found to have some level of efficacy, the issue of attrition must be planned for.

Some research does exist regarding the factors influencing client retention in treatment (Dell et al., 2003; Health Canada, 2001; World Health Organization [WHO], 2004a; WHO Mental Health and Substance Dependence Department, Noncommunicable Disease and Mental Health Cluster, 2000). To retain clients, program staff need to take a creative, unconventional approach to treatment activities and may need to take the treatment to the child (versus having him or her come to another location for treatment). This may not be feasible in residential and detoxification settings, but these elements may be considered in follow-up or outpatient services.

Poor retention was also noted to be a factor when a youth's home environment was significantly dysfunctional or where other familial issues arose through the course of treatment. As a result, treatment may be discontinued because of these confounding factors, when either the youth or the youth's parents are not prepared to address them (Dell et al., 2003; Rowe et al., 2003).

The following are some of the factors found to contribute to client retention in treatment:

- providing clients with detailed program information at assessment and intake
- matching clients to treatment readiness, objectives and methodology
- client acceptance of program philosophy
- client-directed and flexible treatment approach
- respectful and supportive staff
- family involvement and outreach to clients
- using a broad psycho-educational approach addressing the needs of specialized groups
- providing a safe environment (Dell et al., 2003; Duncan, 2000; Terjanian, 2002)

Further, planning for how to engage both youth and parents in the treatment process was paramount to ongoing commitment to treatment (Duncan, 2000; Slesnick et al., 2000).

Access

The inability to locate and then attend the necessary services in an appropriate setting and without too much disruption to family functioning was found to be a barrier to treatment (Dell et al., 2003; Health Canada, 2001). While centralizing specialized services is fiscally responsible, it does pose a difficulty for those families in rural areas or those who have limited travel capabilities. Consequently, a comprehensive assessment of the youth and family functioning needs to be conducted before a course of treatment is decided upon. For example, the Health Canada best practice review (2001) discussed perspectives indicating that residential care was no more effective than a personalized sessional approach. These considerations should be addressed with the adolescent and his/her family when designing a treatment plan as they may relieve significant family hardship and functioning disruptions.

Further access issues included cultural factors (e.g., language differences, social stigma associated with admitting to having a substance use issue, spiritual sensitivity), financial implications for family involvement (because of travel, time away from work), and family dynamics (family unable to participate, housing issues). The involvement of outreach services was found to be particularly useful, not only in improving access to treatment but also in facilitating ongoing follow-up (Health Canada, 2001).

Relevance

Treatment for youth was effective when the youth felt she or he was benefiting from participation in the program (Dell et al., 2003; FFCMH & Keys for Networking Inc., 2001; Health Canada, 2001; Obermeier & Henry, 1989). Further, youth were more likely to feel those benefits if the treatment allowed for personal development, individualized treatment activities, fun, and learning in a non-threatening environment (Dauber, 2004; Duncan, 2000; Terjanian, 2002; Slesnick et al., 2000). Much of this was dependent on the nature and approach of individual staff members, who played a critical role in the client's acceptance of treatment (FFCMH & Keys for Networking Inc., 2001; Health Canada, 2001).

The relevance of programs to various cultural populations must be considered (Dauber, 2004; Dell et al., 2003). For example, information in the literature was found specific to First Nations groups (e.g., Dell et al., 2003; Waldron et al., 2001), and Hispanic (e.g., Morehouse & Tobler, 2000; Waldron et al., 2001) and African American populations (e.g., Aktan et al., 1996; Dennis et al., 2004; Morehouse & Tobler, 2000), and therefore may have elements of cultural relevance that affect outcomes (e.g., First Nations teachings, sweat lodges, ceremonies). These unique elements require the reader to be cautious in drawing conclusions about the general population of substance-using youth based on the results from programs that are specific to a given cultural group.

Recommendations

The final task of this review is to provide recommendations to AADAC on best practice service considerations as was found in the literature. These are listed below as broad, systemic recommendations.

Recommendation 1: Involvement of family

Family involvement in treatment was found to be a common theme across all treatment settings. The specific approach to that involvement (family therapy, parental substance use, family visits, etc.) depends on each adolescent's particular treatment needs. However, it is unclear from the research as to whether family involvement in treatment was more effective than having the youth address family issues in individual treatment.

However, there was strong evidence of the clinical effectiveness of multi-dimensional family therapy and cognitive behavioural therapy when working with substance-using youth and their families.

Recommendation 2: Critical factors

Substance use does not develop in a vacuum. Elements such as peer group, family dynamics and dysfunction, self-confidence, and self-esteem all play a role in treatment outcomes. Community and environmental elements play an important role in the development of the disorder, as well as the treatment. In recognition of the fact that youth will live and grow in a community, and that some of these studies have shown difficulties in maintaining treatment outcomes, ongoing follow-up is critical. Therefore, any treatment for youth with substance use issues must address negative environmental factors, enhance community interactions, and provide for ongoing treatment contacts for youth. A variety of options should be available, from basic help lines or conversations with counsellors, to structured therapy, to crisis interventions when needed.

While this review did not examine the specifics of treatment when concurrent disorders were present, it was evident that treatment of clients who have concurrent disorders seemed to have lower success rates than treatment of clients for whom mental illness is not a factor. Special efforts may therefore need to be made on behalf of clients with concurrent disorders.

Recommendation 3: Cultural elements of treatment

Treatment programs need to be able to respond to the individual cultural elements of youth. Efficacy of treatment involving specific cultural elements with various groups (e.g., aboriginal, Hispanic and African American) was noted in the literature. It is difficult to know how much these results would

apply to youth in general; however, since these approaches have been found somewhat effective for each cultural group of interest, they should be available as a component of treatment for those belonging to cultural minorities. Further, various cultural factors (such as language) can be significant barriers to participation in treatment, and these barriers should be reduced as much as possible.

Recommendation 4: Responsive to unique needs of the individual

A clear indication from the literature was the need for flexible services and treatment planning that can attend to the unique needs of the individual youth. A "cookie-cutter" approach is likely to cause service providers to overlook key risk factors that support the substance use as well as resiliency elements that could foster successful treatment.

Recommendation 5: Treatment setting considerations

When planning the continuum of treatment services for youth, policy makers must carefully consider when, where and how residential services are used to treat youth substance use. Residential treatment does not appear to have any better outcomes than community or outpatient approaches.

Recommendation 6: Contribution to the body of research

AADAC is in an opportune position to contribute to this body of knowledge in a meaningful way. The lack of empirical research in this field limited the completeness of the analysis that could be conducted. By studying the impacts of treatment services, and in particular the two new youth treatment programs in Edmonton and Calgary, AADAC has the ability to become a leader in the academic realm of youth substance use treatment. The detailed data extraction summary in Appendix C provides guidance to the design of research in this field.

Further, specific attention should be paid to exploring the relationship between concurrent disorders and approaches to treatment. The reference list attached in Appendix D provides a basis from which to start such an investigation.

Implications for AADAC

An internal advisory committee developed the following list of implications specific to AADAC.

General concepts in the treatment of youth

Overall findings

Youth substance use programs cannot use the same treatment approaches as are used for adults.

Treatment needs to encompass elements related to family, school, peers and community.

The program environment should be non-threatening and caregivers need to be prepared to go "where adolescents are" in order to engage their participation.

Individualized, unique, client-centred programming is effective in a youth population.

Treatment modalities (such as residential, detoxification and stabilization, wilderness-based, experiential learning and family-centred practice) often overlap and are rarely carried out in isolation.

Treatment services should respond to the cultural needs of individual youth.

Implications

AADAC's current practice reflects all the elements described here.

Residential treatment for youth

Overall findings

Residential programs are appropriate when youth have a significant level of dysfunction as a result of their substance use and when the youth's community or peer environment is not conducive to intensive treatment activities.

The goals of residential treatment are to prevent youths' return to active substance use, provide them with healthy alternatives to substance use, help them to understand and address the underlying factors supporting the substance use, and teach them how to deal with cravings, resist pressures to use substances, and make more healthy decisions.

A complete health assessment is considered best practice before engaging youth in treatment.

Best evidence findings

Residential programming (in combination with other elements such as aftercare) has been shown to decrease substance use for some period of time after treatment (Currie, 2003; Jainchill et al., 2000; Morehouse & Tobler, 2000; Sealock et al., 1997; Winters et al., 2000).

Implications

AADAC provides residential treatment (both wilderness and urban-based) to those clients who require the structure of inpatient treatment and offers outpatient treatment to those who do not require a residential component. By continuing to offer both treatment options, AADAC can meet the needs of youth wherever they are, both geographically and in their recovery process.

Detoxification and stabilization for youth

Overall findings

The goal of detoxification and stabilization is to attend to the physiological and emotional elements that result from withdrawal from substances. Detoxification and stabilization alone are not likely to achieve long-term recovery but are most appropriate as a first phase or preparation for treatment.

The literature review identified that there is limited literature specific to detoxification and stabilization programming for youth. It was therefore unable to provide further insight for AADAC practice.

Implications

There are many organizations that provide "shelter" or "drop-in" style detoxification services to youth, but AADAC is at the forefront of using an active social detoxification model and using that opportunity to engage youth in pursuing further treatment.

AADAC's use of this treatment modality for a youth population could contribute to the literature on this topic in the future, through a review of the quality and effectiveness of AADAC's youth detoxification and stabilization treatment program.

Family-centred practice

Overall findings

Family participation in treatment activities is a significant element in the success of treatment for youth.

Engagement of the family in a youth's treatment is as important as the engagement of the youth.

Family involvement is relevant in residential, wilderness and experiential programs in particular.

Family involvement is critical to supporting abstinence and assisting the youth in future decision-making.

Best evidence findings

Specific treatment approaches within family-centred practice are similarly effective in reducing substance use: motivational enhancement treatment, cognitive behavioural therapy, family support network, adolescent community reinforcement approach, and multi-dimensional family therapy (Dennis et al., 2004).

Brief strategic family therapy has been shown to be associated with reductions in acting-out behavioural problems, marijuana use, and association with anti-social peers. It also shows a high rate of participant retention in treatment programming (SAMHSA, n.d.-a.).

Implications

AADAC continues to take a family-centred approach to the treatment of youth. AADAC believes that the family is the client, as it is the primary factor influencing the youth's development and progress in treatment.

AADAC currently involves the youth's family throughout the youth's treatment process. This includes family work without the youth client, family work with the youth client, family weekend intensive treatment, and active family involvement at intake into treatment, during treatment, and during the youth's transition from treatment to home.

Sometimes there are contraindications to involving the family, such as when there is unresolved violence or sexual abuse within the family, or when the youth or the parents refuse family involvement. Nonetheless, it is still possible to address family issues with the youth through "one-person family counselling." In such cases, the youth alone attends counselling in which the principles of family therapy are used to effect change in the family unit.

In keeping with this belief, treating the family assumes that the dependence is not simply the problem of a young person involved in substance use but also the problem of that youth's family. AADAC believes that the treatment plan needs to be developed for both the youth and the youth's parents so that the treatment facilitates growth in the entire family system.

AADAC uses five types of family-focused treatment approaches. In its spectrum of treatment services AADAC includes family therapists to provide families with any combination of these five types of treatment approaches, depending on the need of the family.

1. *Collateral information gathering:* consulting with family members to obtain their insights and input into the young person's life and situation

   By doing this, AADAC staff learn about the young person's life and their challenges, strengths and supports.

2. *Family orientation:* orienting the parents and/or other family members to the treatment plans for the youth and providing information about drug use and mental health

   This step informs the family about the treatment the young person is undertaking and enlists family support.

3. *Parent family psycho-education or support group:* involving the parents or families in family life education with special reference to substance use and mental health information

   This informs parents and families about family relations issues and how these issues may be relevant to substance use and mental health.

4. *Family counselling:* contracting with the family for interventions aimed at resolving identified problems

   This assists in resolving the problematic issues identified by family members related to the young person's substance use and mental health issues.

5. *Family therapy (myriad approaches):* contracting with the family for interventions aimed at resolving chronic and systemic family dysfunction

   This can bring about change to elusive and intractable areas of systemic family dysfunction.

AADAC also offers support groups available specifically for families of youth (e.g., support [process] groups, drug information groups and parent skill development groups). These groups all contribute to the continuum of treatment AADAC offers to youth and families.

AADAC involves the families of youth clients in many aspects of the youths' treatment and will be in a position to contribute what it learns regarding the outcomes of these family-centred approaches to the addictions field.

Wilderness-based programming and experiential learning

Overall findings

Best practice identifies a broad psycho-educational approach presented in a safe, fun and recreational setting as most effective.

Learning through action is more effective than learning theory.

Marginal evidence findings

Community experiential games and other activities contributed to delayed onset or reduction of substance use among youth not experiencing substance use problems (SAMHSA, n.d.-b) and other outdoor, wilderness-based programs

showed a reduction in severity of emotional and behavioural symptoms (Russell, 2001).

Implications

AADAC is employing these tools in its current programming and will be in a position to contribute information on this topic to the addictions treatment field.

Overall implications for AADAC

Because AADAC is implementing programming that encompasses all of these elements (residential treatment, detoxification and stabilization, wilderness-based and experiential learning, and family-centred practice), most of which are not well researched to date, AADAC is in a prime position to undertake research on all of the treatment modalities and report on the outcomes of each, thereby contributing valuable information to the addictions field.

AADAC must plan to gather the information necessary to adequately research its treatment methods for youth.

AADAC provides several treatment modalities to meet the wide-ranging needs of its youth clients. By doing this, AADAC can encompass the greatest number and variety of youth in its continuum of treatment options.

Project limitations and next steps

Throughout this report, there is reference to a variety of considerations, challenges and barriers experienced in the process. A number of limitations to this report must be noted as well as the potential next steps they present.

The treatment setting categories of interest for this review are very broad and encompass a number of subcategories of services. For example, within the family-centred category, there are many different approaches to family therapy. An independent study in itself could be conducted on the varying efficacies of different family therapy approaches with adolescent substance abusers. Similar subcategory issues were found within residential treatment in that many services may be provided in that setting, all changing the level of impact for an individual youth. Consequently, a detailed inventory of specific treatment services would need to be searched and analyzed on these subcategories in order to provide a comprehensive statement about best treatment practices.

Access to some of the articles of interest was difficult, particularly to those in journals not regularly carried by document suppliers.

This review did not interview staff from organizations providing treatment to inquire about internal evaluations that may not be available through a search. Such interviews would probably locate programs that have yet to be explored scientifically but hold some value in strengthening the subjective information included in this review. Therefore, employing a variety of information gathering approaches may further expand the understanding of the treatment dynamics of interest.

Many of the articles that fell within the initial search criteria were screened out when specific reference to the adolescent population was not defined. Consequently, these researchers may have data specific to the subcategory of adolescents but, without follow-up contacts, this information was not available.

It is common for substance users to consume more than one drug; this is referred to as "poly-substance use" (UNODC, 2004). Therefore, identifying the most effective treatment approach by individual drug is a more complex analysis and not within the scope of this review.

There is a great deal of research on the use of pharmacotherapy for specific drug use in adults, particularly in the residential or detoxification setting (e.g., see WHO, 2004a; WHO 2004b). The role, function, and efficacy of this treatment approach with adolescents remain unclear. Without going into a deeper analysis of the specific therapy for each drug of concern, it is difficult to assess and compare overall effectiveness or appropriateness within the individual treatment settings being examined in this paper.

Many articles describing school-based programs or prevention/community approaches to substance use issues were found. Similarly, a number of hits were specific to youth with criminal backgrounds or mental health disorders. While these were excluded from this review, independent reviews of treatment approaches appropriate to these populations would enhance AADAC's ability to develop treatment that fits the specific needs of the variety of youth treated by AADAC.

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Appendix A: Search methodology

Search parameters

Topic

Documents discussing substance abuse treatment (residential, experiential and family therapy) for children and adolescents.

Issues addressed

Key issues: evidence-based research, systematic reviews and critical appraisals

Evaluation or empirical studies or reviews—i.e., includes measures of quality or outcomes to allow a determination of quality and effectiveness (descriptions of approaches alone will not be included except for contextual information)

Sample size of five or more subjects (individual or small group case studies will not provide scientifically rigorous information for determining quality, effectiveness, etc.)

Types of information

Key articles, discussion and background papers, reports

Inclusions

Ages: youth (12 to17 years of age)

Language: English

Jurisdictions: Canada, United States, Great Britain, Australia, New Zealand

Date range: last 10 years

Exclusions

Aversive therapies

General policy papers that do not describe a specific intervention

Studies whose primary focus is on treating a concurrent disorder (excluded but tagged for AADAC's reference)

Search methodology

A systematic, though not exhaustive, literature search identified key published and unpublished literature in English discussing evidence-based residential, experiential and family therapies for youth with substance use disorders.

Medline was searched via Dialog for articles and papers. Key concepts were searched using MeSH (Medical Subject Headings) and text words. PsycINFO was searched via Dialog for articles, papers, dissertations, and book chapters using PsycINFO subject headings and text words. Where subjects were well indexed (e.g., substance use, family therapy, etc.), only subject headings were used to increase relevance and precision and to ensure a manageable number of hits; where subjects were less well indexed (e.g., evidence-based research, systematic reviews, etc.), key words were added to increase recall. A selection of major library catalogues; grey area literature repositories; free Internet-accessible databases; and websites of government departments, think tanks, research institutes and other relevant organizations was searched for the grey area literature, which included books, reports, and unpublished material. A summary of resources searched and terminology used follows. Literature was selected for inclusion in the review based on examination of abstracts and indexing (subject headings) where available, and on full text or table of contents if accessible at no cost on the Internet.

Core search

APPENDIX A, TABLE 1: SEARCH TERMINOLOGY/STRATEGY FOR CORE SEARCH

Bibliographic databases searched included Medline, PsycINFO and several specialized databases summarized in the grey literature resources. Database-specific subject headings were used. Subject headings were exploded where possible to include narrower terms in the search. Textwords (keywords) were used to search titles, abstracts and full text as available.

Subject headings and textwords identifying substance use disorders:

Subject headings: explode Drug Usage OR explode Addiction OR explode Drug Abuse OR explode Substance-Related Disorders OR Alcoholism

Textwords: (drug OR substance) (use OR abuse) OR alcoholism OR addiction

Subject headings and textwords identifying treatment:

Subject headings: explode Drug Rehabilitation OR Residential Treatment OR Residential Care Institutions OR Halfway Houses OR Group Homes OR Institutional Schools OR explode Family Therapy OR Family Intervention OR Family OR Family Relations OR Problem-Based Learning OR Therapeutic Camps OR Wilderness Experience

Textwords: Outward Bound OR (wilderness OR adventure) (program* OR therap* OR experience* OR group*) OR family (centered OR centred OR focused OR focussed OR intervention*) OR problem based learning OR stabilization OR stabilization or detox*

Subject headings and textwords identifying evidence-based research, systematic reviews, critical appraisals, and effectiveness:

Subject headings: Evidence-Based Medicine OR Benchmarking OR Treatment Effectiveness Evaluation

Textwords: evidence-based OR best practice* OR gold standard OR critical appraisal* OR systematic review* OR benchmark* OR effective (practice* OR intervention*) OR effectiveness

Subject headings and textwords identifying youth:

Subject headings: Adolescent OR Adolescence

Textwords: adolescen* OR youth

Limits applied:

Language: English

Date of publication: 1995–present (December 2005)

Core search

APPENDIX A, TABLE 2:
CONVENTIONAL (COMMERCIAL) DATABASE SEARCH SUMMARY

DATABASE	DATE COVERAGE	TOTAL HITS	SELECTED HITS	COMMENTS
Medline	1995–2005/12/11	67 combined for the two databases (duplicates removed)	39	39 unique hits
PsycINFO	1995–2005/12/11		28	28 unique hits

Grey literature search

APPENDIX A, TABLE 3: GOVERNMENT AND INTERNATIONAL AGENCIES

NAME & URL	COMMENTS
Canada	
Health Canada, Public Health Agency of Canada: Family/Parenting *http://www.phac-aspc.gc.ca/dca-dea/family_famille/index_e.html*	• Nothing in scope
Health Canada, Public Health Agency of Canada: Division of Childhood and Adolescence *http://www.phac-aspc.gc.ca/dca-dea/main_e.html*	• Nothing in scope
Australia	
Australian Government, Department of Health and Ageing *http://www.health.gov.au/*	• searched National Drug Strategy website at *http://www.nationaldrugstrategy.gov.au/* • 4 hits, 0 in scope
Australian Government, National Health and Medical Research Council: Drugs and Substance Abuse page *http://www.nhmrc.gov.au/publications/subjects/substance.htm*	• 1 item in scope
Great Britain	
Department of Health *http://www.dh.gov.uk/*	• 37 hits, 0 in scope
International	
United Nations Office on Drugs and Crime *www.unodc.org*	• 5 hits, 3 in scope
World Health Organization *www.who.org*	• 3 items in scope
New Zealand	
New Zealand Ministry of Health *http://www.moh.govt.nz/moh.nsf*	• searched online library catalogue and browsed health topics • 50 hits, 0 in scope
United States	
Center for Substance Abuse Prevention (part of SAMHSA) *http://prevention.samhsa.gov/*	• 8 items possibly in scope
Child & Adolescent Workgroup (CAWG) *http://www.drugabuse.gov/about/organization/ICAW/prevention/preventionfindings298.html*	• Nothing in scope
National Institute on Drug Abuse *http://www.nida.nih.gov/*	• Nothing in scope

Grey literature search

APPENDIX A, TABLE 4: ORGANIZATIONS AND RESEARCH INSTITUTES

NAME & URL	COMMENTS
Canada	
Canadian Centre on Substance Abuse (CCSA) http://www.ccsa.ca/	• searched addictions database and library catalogue • 21 hits, 4 possibly in scope
Centre for Addiction and Mental Health (CAMH) library http://www.camh.net/	• 4 hits, 1 possibly in scope
Great Britain	
Centre for Reviews and Dissemination http://www.york.ac.uk/inst/crd/	• searched all databases (DARE, NHS EED, HTA) (includes Cochrane reviews) • 39 hits, 1 non-journal item possibly in scope
International	
The Cochrane Collaboration http://www.cochrane.org/	• searched abstracts at *http://www.cochrane.org/reviews/index.htm* • 66 hits, 0 in scope
United States	
National Clearinghouse for Alcohol & Drug Information (through CSAP) http://www.health.org	• Nothing in scope
National Mental Health Information Center http://www.mentalhealth.org/	• 6 hits, 1 possibly in scope

Grey literature search

APPENDIX A, TABLE 5: LIBRARY CATALOGUES, SPECIALIZED DATABASES, INTERNET PEER-REVIEWED SITES AND INTERNET SEARCH ENGINES

NAME & URL	COMMENTS
Library catalogues	
New York Academy of Medicine (Grey Literature Repository) *http://nyamed.aspvoy.endinfosys.com/cgi-bin/Pwebrecon.cgi?DB=local&PAGE=First*	• 73 hits, 1 possibly in scope
Specialized databases and resources	
Canada Institute for Scientific and Technical Information (CISTI) *http://cat.cisti-icist.nrc-cnrc.gc.ca/search*	• 12 hits, 0 in scope
The Cochrane Library *http://www3.interscience.wiley.com/cgi-bin/mrwhome/106568753/HOME*	• 4 hits, 0 in scope
Grey Literature Report *http://www.nyam.org/library/greyreport.shtml*	• 31 hits, 0 in scope
National Library of Medicine (U.S.) Gateway *http://gateway.nlm.nih.gov/*	• Gateway includes LocatorPlus, meeting abstracts and other collections (e.g., research in progress) • 15 hits in catalogue, 24 in meeting abstracts; 1 in scope
Internet search engines	
Google Scholar	• Nothing unique
Vivisimo	• Nothing unique

Grey literature search

APPENDIX A, TABLE 6: INDIVIDUAL RESEARCHERS CONTACTED

NAME & URL	COMMENTS
Colleen Dell Senior Research Associate/Academic Liaison Canadian Centre on Substance Abuse Suite 300, 75 Albert Street Ottawa, ON K1P 5E7 Tel: 613-235-4048 (ext.235) Fax: 613-235-8101 cdell@ccsa.ca Assistant Professor, Department of Sociology & Anthropology Carleton University 1125 Colonel By Drive Ottawa, ON K2B 5E6 Tel: 613-520-2600 (ext. 2625) Fax: 613-520-4062 cadell@ccs.carleton.ca	• 73 hits, 1 possibly in scope • first author on Youth Residential Solvent Treatment Program Design: An Examination of the Role of Program Length and Length of Client Stay: Final Report • followed up with her to get the full report of the Youth Residential Solvent Treatment Program Design; she provided selected sections for citation

Appendix B: Data extraction template

Field-specific data extraction guide

Setting

List all that apply:

- R = residential
- D = detoxification and stabilization
- W = wilderness
- E = experiential
- F = family-centred
- O = other

Author (date)

Use a. b. c for more than one article by same person in one year. Full references are located in the Reference Section.

Target group

- age range
- gender
- substances
- voluntary/mandated
- family involvement
- education
- cultural background

Intervention

- treatment description and duration
- program entry criteria
- method of recruitment
- program goals
- underlying theory or assumptions

Level methods

Level of evidence coded from 1 to 5 based on criteria

- study design
- sample size
- outcome measures
- study rigour

- research design
- internal validity
- reliability of outcome measures
- reliability of validity measures
- attrition measures
- implementation tracking (verification that implementation was delivered as intended)

Outcomes

- quality and effectiveness of intervention
- impact of treatment
- best fit
- percentage completing intervention

Comments

- applicability to Alberta context
- concurrent issues (e.g., mental health, legal)

APPENDIX B, TABLE 1: SAMPLE DATA EXTRACTION TABLE

SETTING	AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES	COMMENTS/ OBSERVATIONS
		Age	Goal	Level	Research design		Concurrent issues
		Gender	Underlying theories	Sample size	Groups similar at baseline?		Barriers/ challenges
		Substances	Eligibility criteria	Outcome measures	Point estimates and measure of validity for primary outcome measure		
		Voluntary/ mandated	Treatment				
		Education	Duration		Intention to treat analysis		
		Family involvement					
		Cultural background					

Appendix C: Data extraction results

APPENDIX C, TABLE1: DATA EXTRACTION RESULTS

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
F, O **New Mexico** **Waldron, Slesnick, Brody, Turner & Peterson (2001)**	**Age** 13–17 **Gender** Both **Substances** Illicit drugs; marijuana use typified the majority; excluded were youth abusing only alcohol or alcohol/tobacco. **Voluntary/mandated** Most were mandated to treatment by court order, by probation officers in lieu of a court order, or by schools in lieu of suspension or other consequence. **Family involvement** Yes **Education** Youth: 9–10 years of schooling Caregivers: 13–14 years of schooling **Cultural background** ◦ Hispanic (56) ◦ Anglo-American (46) ◦ Native American (9) ◦ Mixed/other (9) **Concurrent issues** Co-morbid diagnoses were examined for the treatment sample using the Achenbach and Edelbrock Child Behavior Checklist. Sample had scores ≥ the mean for a comparison group of referred youth for ◦ delinquent behaviour (89.9%)	**Description** Cognitive behavioural therapy (CBT), functional family therapy (FFT), combined individual and family therapy (joint), group intervention. **Program entry criteria** Participants drawn from youth living at home in Albuquerque, NM area with primary caregiver who was also willing to participate and met *DSM-IV* criteria for a primary substance abuse disorder. **Recruitment** Participants were referred to the University of New Mexico Center for Family and Adolescent Research for drug abuse treatment. Referrals were from ◦ juvenile justice system (43%) ◦ public school system (31%) ◦ self or parent referral (21%) ◦ other treatment agencies (5%) Individually oriented CBT skills training program: ◦ modelled after Monti's coping skills training programs (1989) and by Kadden's Project MATCH (1995) ◦ designed to teach self-control and coping skills to avoid substance use ◦ two-session motivational enhancement intervention, and 10 skills modules (e.g., communication training, problem solving, peer	**Level 1: Experimental study** (no blinding) Pre-test family eligibility screening: assessment battery about four to five hours **Sample size** 114 final participants, gender not specified; started with 120 (96 males, 24 females). Youth randomly assigned to one of four treatment conditions: ◦ FFT (31 families) ◦ Individual CBT (31 families) ◦ Combination of FFT and CBT (Joint) (29 families) ◦ Psycho-educational group (30 families) Follow-up assessments at four and seven months after initiation of treatment (i.e., at completion of treatment and three months after treatment completion). **Outcome measures** Primary substance abuse measures (based on marijuana because it was the predominant drug of choice): ◦ Primary measures of quantity and frequency of substance use were percentage of days marijuana was used and percentage of days any drug was used, obtained for all adolescents and	An "urn" randomization procedure was used that retains random allocation while balancing treatment condition groups on *a priori* variables. Minimal attrition; six didn't complete either the four- or six-month post-treatment assessment and were dropped from analyses. Seven families agreed to participate, but didn't attend any sessions; they were dropped from the sample. Eleven youth and their families attended only one or two sessions; of these, 10 completed follow-up assessments and were included in all analyses as part of the full intent-to-treat sample. The non-completers (18 families who attended ≤ two sessions) were compared with the completers (109 families who attended ≥ three sessions). Differential exposure to intervention: youth offered 12 hours of therapy in three of the treatment conditions (FFT, CBT, or Group Therapy) and 24 hours of therapy in joint intervention (one hour FFT and one hour CBT per week).	**Effectiveness of intervention** Found a significant change in marijuana use from pre-treatment to four-month assessment for ◦ FFT (86.6% vs. 55.2%) ◦ CBT (96.8% vs. 72.4%) ◦ joint (89.7% vs. 55.6%) Found a significant change in marijuana use from pre-treatment to seven-month assessment for ◦ FFT (86.7% vs. 62.1%) ◦ joint (89.7% vs. 55.6%) ◦ group (96.7% vs. 69.0%) Found significant difference for the two combined family conditions (therapies) compared with group condition at four months. Found significant difference for the two combined family conditions (therapies) compared with CBT condition at seven months. Both family conditions showed significant reduction in marijuana use from pre-treatment to the four-month assessment; this persisted until the seven-month assessment.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	• various clinical problems: anxious/depressed (29.7%) attention difficulties (27.3%) externalizing behaviour (47.7%) internalizing behaviour (45.3%)	refusal, negative mood management, social support, work- and school-related skills, relapse prevention) FFT program: • systems-oriented, behaviourally based • overall goal: to alter dysfunctional family patterns that contribute to youth substance use • applied in 2 phases: first focuses on engaging families in treatment process and enhancing motivation for change (family assessment done during this phase); second focuses on effecting behaviour changes in the family Combined FFT and CBT program: • Youth were assigned CBT therapists; families were assigned FFT therapists. • Youth attended 2 sessions weekly for a total of 24 sessions. Psycho-educational program: • modelled after tertiary prevention education strategies widely used for youth substance abuse programs • provided information about drugs and alcohol, explored expectancies and consequences of substance use, provided opportunities for youth to identify self-esteem-enhancing alternatives, and included skills training (e.g., assertiveness and refusal skills)	caregivers with Miller and Del Boca's Form 90D version of the Timeline Followback interview. • Dichotomous dependent variable classified each youth as having "minimal" or "heavy" use (use on fewer than or more than 10% of days in assessment period). • For all participants, substance use at pre-treatment was examined for the previous 90-day period; assessment was done again at 4 months and 7 months follow-up points. Other measures: • collateral reports • urine drug screenings • other unspecified measures Also administered: • POSIT self-report instrument • CBCL child behaviour scale		

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
F, O **Four U.S. states** **Dennis, Godley, Diamond et al. (2004)**	**Age** 15–16 **Gender** 83% male 17% female **Substances** Cannabis (including hashish, marijuana, blunts and other forms of tetrahydrocannabinol) **Voluntary/mandatory** Voluntary **Family involvement** Yes, in some interventions **Education** Not specified **Cultural background** 61% white 30% African-American 9% unspecified **Additional information** No differences between treatment conditions within sites or across sites within the same trial on the following variables: • 87% enrolled in school • 62% currently involved in juvenile justice system • 39% reported risky behaviours: multiple sexual partners (39%) unprotected sex (23%) substance use in hazardous situations (54%) About one-quarter had participated in substance abuse or mental health treatment previously. Differences mentioned: • trial two sites: more African-	**Description** Cannabis Youth Study (CYS) involved five intervention models. • motivational enhancement treatment/cognitive behavioural therapy, five sessions (MET/CBT5): two individual MET sessions and three group CBT sessions, total duration six to seven weeks; teaches basic skills (refusing cannabis, establishing a social network supportive of recovery, developing a plan for pleasant activities to replace cannabis-related ones, coping with unanticipated high-risk situations, problem solving, relapse recovery if necessary) • motivational enhancement treatment/cognitive behavioural therapy, 12 sessions (MET/CBT12): two individual MET sessions and 10 group CBT sessions; total duration 12–14 weeks; additional CBT sessions teach coping skills, address problem-solving, anger management, communication skills, resistance to craving, depression management, and management of thoughts about cannabis • family support network (FSN): used MET/CBT12 for adolescents along with six parent education group meetings (to improve parent knowledge and skills), four	**Level 1: Experimental study/** **Level 4: Before-and-after observational study** **Study design** Randomized block design; conditions were modelled as nested within site, producing a statistic for significance site effects, conditions across site effects, and conditions within site effects. No control or treatment as usual condition. Over two years, participants randomized from sequential admissions to the four treatment sites. Adolescents were randomly assigned within each site to one of three treatment conditions; the interventions were evaluated in two trials. Trial 1 (at two sites): random assignment to one of • MET/CBT5 • MET/CBT12 • FSN Trial 2 (at two sites): • MET/CBT5 • ACRA • MDFT Adolescents were interviewed with the Global Appraisal of Individual Needs (GAIN) and other measures (not specified) at intake, and again at three, six, nine and 12 months. Data was collected from collateral informants, service	**Research design** Analyses were conducted by site and across sites for each of the two trials with baseline measures as covariates to allow for individual differences, nesting conditions within site to control for site differences, and using restricted maximum likelihood estimation to use all the available data without biasing condition estimates. No pooling of data across the two trials. Analyses were conducted with an "intent to treat" approach (included about 5% who did not receive treatment). Authors note that test-retest reliability of key GAIN measures with 210 adolescents revealed consistent reports of • days of cannabis use • days of alcohol use • lifetime abuse/dependence symptoms • lifetime diagnosis Authors note limitations (clinical portion of study): • reliance on participant self-report • lack of no-treatment control group	**Effectiveness of intervention** Clinical outcomes: No significant difference found among treatments for either total days abstinence or percentage in recovery after controlling for site and baseline days of abstinence/recovery status in month before intake. Economic outcomes not abstracted. Authors note (though don't provide analysis and this was not the purpose of the study) that all five CYS interventions demonstrated significant pre-post-treatment effects that were stable in terms of increasing days of abstinence during the 12 months after adolescents were randomized to a treatment intervention, and the percentage of adolescents in recovery at end of study; clinical outcomes were very similar across sites and condition. Relapse patterns were further examined over the follow-up period. Half of the adolescents went in and out of recovery and relapse one or more times after discharge, and two-thirds were still reporting substance use or related problems at 12 months follow-up; CYT interventions were not enough to interrupt all future substance use. Replications are underway.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	American, female, sexually active, and less likely to be employed	therapeutic home visits, referral to self-help support groups, and case management. Parent education provided information on adolescent development and parent's role, substance abuse/ dependence, family development and functioning, etc. Home visits focused on initial assessment and motivation building, family roles and routines, etc. • adolescent community reinforcement approach (ACRA): 10 individual sessions with adolescent, four sessions with caregivers (two with whole family), with limited case management; total duration 12–14 weeks. Adolescent sessions incorporate operant learning, skills training and a social systems approach. Core procedures used are functional analyses to identify antecedents and consequences of substance use and pro-social behaviour; two parent sessions include review of important parenting practices, increasing positive communication in the family, problem-solving, etc. Two sessions bring parents and adolescents together to practice communication and problem solving. • multi-dimensional family therapy (MDFT), composed	logs, urine tests, and other process measures to validate self-report data taken at intake and at three and six months. **Sample size** 600 adolescents and their families (85% of eligible adolescents agreed to participate). **Outcome measures** Data presented were available from one or more follow-up interviews for 99% of the adolescents. Data collected from participant interviews, collateral interviews. The two clinical measures were • days of abstinence between the randomization date and the 12-month follow-up interview (summed over all four quarterly follow-up waves) • whether the adolescent was in recovery at end of study (defined as living in the community and reporting no past-month substance use, abuse or dependence problems at the 12-month interview) For the 6% of adolescents who did not complete their 12-month interview, data from their previous follow-up was used.		

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
		of 12–15 sessions (six with the adolescent, three with parents, and six with whole family) in three phases: – setting the stage (engaging adolescents, engaging parents, etc.) – working the themes for adolescents (trust/ mistrust, abandonment and rejection, etc.) and families (preparing for parent/adolescent communications, shifting from high conflict to affective issues, etc.) – sealing the changes (preparing for termination, preparing for future challenges, etc.) **Entry criteria** Eligible for CYS if aged 12–18, self-reported one or more *DSM-IV* criteria for cannabis abuse or dependence, had used cannabis in the past 90 days or 90 days prior to being sent to controlled environment, and were appropriate for outpatient or intensive outpatient treatment. Also included adolescents with alcohol and drug diagnoses and co-occurring psychiatric disorders, as well as those with only cannabis abuse diagnoses, and/or less than weekly substance use (to achieve goal of generalizing; see below). Various exclusion criteria including high alcohol or other drug use.			

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
		Recruitment Over two years (1998–2000), participants recruited from existing case flow of the treatment sites, through outreach to the juvenile justice system, schools and doctors, and through public service announcements.			
F, R **Michigan** **Aktan, Kumpfer & Turner (1996)**	**Age** 6–12 (82% aged 6–9) **Gender** Both **Substances** Not specified **Voluntary/ mandatory** Not specified **Cultural background** African-American children of known substance users in City of Detroit **Education** Parents: 2% elementary 35 % junior high 35% high school 21% some college 7% college grad Children: 32% kindergarten or Grade 1 27% Grade 2 or 3 41% Grade 4 or higher 45 children had repeated a grade in one or two years **Concurrent issues** About half the children had experienced significant school failure. Study involved inner-city African-American families;	**Description** 12 weeks Three self-contained courses: • parent training course • children's skill training • family skills training Program brought all members of the family together for at least one evening a week. **Eligibility criteria** Parents admitted to Salvation Army Harbor Light Residential Drug and Alcohol Treatment Center in Detroit who have children 6–12 years old and are interested in and committed to participation.	**Level 3: Controlled observational study** (non-equivalent comparisons, repeated measures design) **Sample size** 88 individual parents, both substance using and non-using; 88 children (49 males, 39 females) **Outcome measures** Parent interviews (drawn from the Moos Family Environment Scale and the Achenbach and Edelbrock Child Behavior Checklist) and child interviews	**Research design** Pre- and post-test measurement on a standardized battery of the parents and "targeted" children (only one child per family). • 6- and 12-month follow-up • a culturally specific evaluation component **No data on whether groups were similar at baseline.** Unknown whether outcome assessors were blinded to treatment allocation. Care providers not blinded. Subjects not blinded. **Intention to treat analysis** There is no information on the non-completers. **Point estimates and measure of validity for primary outcome measure** CBCL was rated by parents; it is possible that the changes reported reflect solely changes in the perceptual system of the parents.	Parents in high- and low-drug-use groups reported drop in illegal drug use in family, and in their own drug use. High-drug-use parents only reported significant increases in time spent with their children. High-drug-user group reported significant reduction in depression. High-drug-user group reported significant improvement in perceived efficacy as parents (in high-drug-use parents). High-drug-use parents reported significant increase in the amount of time they spent with their children. Children of high-drug-use parents showed improvements in externalizing problem behaviours (e.g., aggression and hyperactivity) and composite externalizing scale. Children of high-drug-use parents showed improvement in internalizing scales (schizoid scores,

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	may have limited applicability to rural Alberta.				depression, uncommunicativeness, obsessive-compulsive behaviour). Children of low-drug-use parents reported reduced school problems. Children of parents in both groups reported increases in school bonding and time spent on homework. No changes in children's conduct disorders, delinquent behaviours and social withdrawal. No reduction in the use of corporal punishment. Scores on the family cohesion scale of the Family Environment Scale were improved. Family conflict, family relationship, and family organization were unchanged. Rating of participant involvement was not predictive of outcomes. After first few months of implementation, 80% completed intervention. Study was not set up to address concurrent disorders but does show improvement on schizoid scale, OCD scale, and depression scale for children. Study also reports reduction in depression among parents.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
R, O **Maryland** **Sealock, Gottfredson & Gallagher (1997)**	**Age** Adolescents (exact age not specified) **Gender** Both **Substances** Not specified (although urine test results listed THC, cocaine, morphine and PCP) **Voluntary/mandatory** Mandatory **Family involvement** Yes **Education** Not specified **Cultural background** Unknown	**Program entry criteria and recruitment** Youth detained at the Maryland Dept. of Juvenile Services detention facilities between 1992 and 1994, who were identified as "chemically addicted" or "dependent" using the Substance Abuse Subtle Screening Inventory. Youth who received aftercare services were drawn from participants in Baltimore only. Residential program: Males and females committed to single-sex facilities for an average of 11 weeks (males) and 13 weeks (females). Youth completed steps 1 to 9 of the Alcoholics Anonymous Recovery Program, were required to attend at least six support group sessions per week, and were offered a variety of other treatment resources. Also offered were academic, recreational, and vocational educational programming; therapeutic recreation; work assignments; social activities. Ranged in length from six to eight weeks; youth were then either released to their community or administered additional aftercare services. Aftercare services: Aftercare services were intended to alter family conditions (e.g., discipline, enabling behaviours), increase youth involvement in productive community activities, and reduce negative peer pressure.	**Level 3: Controlled observational study** **Sample size** 700 youth **Study design** Control group: same diagnosis criteria; youth not committed to residential treatment program but to probation instead. On entering facility, participants received medical and psychological assessment and entered into a preliminary treatment contract based on the youth's particular problems, needs and long-term goals (e.g., increasing communication, decision making, problem solving, and coping skills; increasing self-awareness, sense of control and ownership of behaviour; increasing knowledge of relapse signs; increasing family member knowledge of alcohol/other drug use and disease concept of alcohol/other drug use). Administration of interview for treatment and control group youth was identical except that control group youth were told that their participation was voluntary. Pre-test interview was completed by 84% and 95% of the identified treatment and comparison group members respectively. Youth were interviewed again about two months after administration of pre-test; for treatment youth, this was	**Study design** Comparison of intervention subjects with a voluntary control group not receiving the intervention. Assignment to treatment and comparison group was based on the judge's disposition of the case. Residential segment: Treatment participants: 298 drug-involved youth committed by the judge to the residential facility Comparison group: 222 drug-involved youth assigned to supervision of a probation officer. Aftercare segment: Treatment participants: 120 youth in Baltimore received service. Comparison group: 132 youth who had received residential treatment and who were from the more urban counties in Maryland. Caveats per author: • youth not randomly assigned to groups • unmeasured factors related to assignment to groups might account for the differences • substantial differences in interview response rates for the groups might have introduced bias due to differential attrition	**Effectiveness of intervention** At approximately two months after entering the study, the residential treatment group (relative to comparison group) reported significantly lower levels of drug use and delinquent behaviour (both property and personal crimes), higher levels of attachment to an adult male responsible for them, and more accurate knowledge of physical and psychological effects of alcohol and other drugs; the treatment group also scored higher on the Means-Ends Problem Solving test. Regression analysis showed that each of the differences above (except for attachment to an adult male) persisted after applying controls for pre-existing differences between treatment and comparison groups. For youth assigned aftercare, only the difference favouring emotional abuse persisted. Eighteen months post-treatment: • Arrest rate for treatment youth was significantly lower than for comparison group (other recidivism measures not significantly different). • Recidivism was significantly higher for the aftercare group than the non-aftercare group; number of drug-related arrests higher

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
		Organized in three phases: • Pre-release: while youth participating in residential treatment; commenced with family assessment in which a therapist developed a family treatment participation contract; family was encouraged to participate in weekly group sessions during residential care. • Intensive aftercare: encompassed the first two months after youth's release; involved extensive supervision and daily face-to-face contacts, youth support group meetings, and family support meetings; also, youth met individually with an addictions counsellor and for home visits as part of family therapy. • Transitional aftercare: an additional two months after intensive phase; marked by shift in supervision and frequency of interventions from one of project-specific provision to one of emphasizing integration into community service network and system; youth met with case manager twice per week and with addictions counsellor at least twice per month; youth were linked with community-based services to supplement contact and counselling; family support groups continued on an as-needed basis.	done at their facility and coincided with their departure from the program; for comparison youth, this was done in the probation officer's office and was done to maintain a parallel time frame with the treatment youth. Post-test interview was completed by 93% and 68% of the identified treatment and comparison group members respectively. Aftercare post-test was identical to aftercare pre-test, except some questions were altered by a reference time frame so that youth reported only on behaviours during the aftercare period. Aftercare post-test was completed by 56% and 51% of treatment and comparison group members respectively. **Outcome measures** Measures scales used came from a number of sources (most unnamed but described in appendix) and fell into three categories: • delinquency and drug use items • family items • individual items Urine tests were administered at the end of the aftercare post-test interview (to 96% and 81% of treatment and comparison group youth respectively); remainder not tested because of either refusing to be tested or unique interview conditions.		(other recidivism measures not significantly different). • Adjudicated offences significantly favoured comparison group (67% of aftercare and 41% of comparison group were adjudicated) However, controlling for a number of variables and comparing raw differences after applying statistical controls for pre-existing conditions showed no significant difference in recidivism rates between the two groups (aftercare vs. no aftercare). Aftercare program: No significant differences. Authors conclude that results imply that a two-month residential treatment program is "not sufficient to significantly reduce recidivism among this youthful drug-involved population, despite some evidence of positive effects during the treatment period" (p. 229). "Treatment-oriented aftercare services of the quality and intensity delivered in the program studied here are not beneficial when compared with the customary services [adolescents] would be expected to receive. Results suggest instead that participation in an aftercare program may be related to an increase in involvement with the criminal justice system" (p. 230).

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			Records of juvenile and adult offences and previous residential placements were collected. Two scales of the SASSI were used as control variables: Face Valid Alcohol scale and Face Valid Other Drug scale.		
R **Minnesota** **Winters, Stinchfield, Opland, Weller & Latimer** **(2000)**	**Age** 12–18 **Gender** Both (56% male) **Substances** Marijuana, alcohol, amphetamines, and other **Voluntary/mandatory** Voluntary **Cultural background** White (85%) **Family involvement** Yes **Concurrent issues** 82% history or current co-existing psychiatric disorders (ADHD, conduct/oppositional defiant disorder, and major depression)	**Description** Residential included residential program plus six months of outpatient continuing care. Non-residential was outpatient care. Both groups received the Minnesota Model, which combines the principles of the 12 steps of AA and basic principles of psychotherapy. Interventions included group therapy, individual counselling, family therapy, lectures about the 12 steps of AA, AA-based reading and writing, assignments, school study sessions, occupational and recreational therapy. Step work focused on the first 5 steps. Families attended sessions with other family members one evening per week. **Duration** Four weeks for residential 30 sessions during six consecutive weeks for outpatient **Eligibility criteria** Age 12–18; reside in seven-county metro area; meet criteria for at least one current	**Level 2: Quasi-experimental** Descriptive study **Sample size** 245 (179 received Minnesota Model; 66 wait-listed) **Outcome measures** Drug Use Frequency (DUF): Administered at intake and follow-up periods. Gathered on outpatients since initial evaluation. Urinalysis at follow-up. Parent Report: Parents administered DUF asking if they had information of their child's alcohol or other drug use at follow-up.	**Research design** Compared two groups. One received Minnesota Model treatment either in a residential setting or outpatient setting; the other group was wait-listed (received no treatment). The study compared completers with non-completers and those who received no treatment, and compared those who received no treatment with non-completers. **Groups similar at baseline?** Similar in age, gender and drug use problem severity. Boys had higher externalizing and girls had higher mental health treatment. **Follow-up** Yes **Point estimates and measure of validity for primary outcome measure** DUF internal consistency: alphas = 0.82–0.93 One-week retest stability: r = 0.86–0.91 **Intention to treat analysis** 66 potential subjects refused to participate. They had	• Reduction in drug use (particularly cannabis use) for completers. • Less pre-post change for 12 months post than for six months post. • Completers had better minor-lapse-abstinence scores than non-completers and wait-list group. • No difference between non-completers and wait-list group. • 12-step model is associated with favourable treatment outcomes and treatment retention is an important contributor to outcome. • Residential treatment clients received one-third more contact with therapists than did outpatients. Did not observe loss of outcome effect for outpatient as compared with residential (two groups didn't differ on problem severity). Authors' notes: The lack of difference between residential and outpatient outcomes calls into question the cost of residential treatment.

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		psychoactive substance dependence disorder; not actively psychotic; no developmental disability; medical clearance verifying absence of acute intoxication and withdrawal symptoms; admission to 12-step Minnesota Model treatment program.		higher rates of previous mental health treatment and parental history of substance abuse.	The importance of treatment completion is emphasized by no difference between non-completers and wait-list group.
R **New York** **Morehouse & Tobler (2000)**	*population is akin to street youth **Age** 13–19 **Gender** Both **Substances** Alcohol and other drugs **Voluntary/mandatory** Voluntary **Cultural background** Primarily African-American and Latino **Family involvement** Yes	**Description** Residential Student Assistance Program (RSAP) **Eligibility criteria** Institutionalized for 30 days or more, and agreed to participate in the study **Treatment** Initial assessment by trained, supervised specialist • six to eight 45-minute sessions on substance use, family problems and stress • outreach activities to involve youth • weekly (for eight weeks) independent 45-minute group counselling for youth with drug-abusing parents • individual counselling (45-minute sessions) • referral to outside alcohol and drug programs • facilitation of involvement in 12-step programs • residential task force to change norms and culture of facility (30–45 minutes weekly)	**Level 3: Controlled observational study** **Sample size** 280 intervention youth completed pre-test but only 232 completed pre- and post-test. 255 non-intervention youth. **Outcome measures** Measure of change was alcohol and other drug use in the last 30 days. **Measures**: Monitoring the Future questionnaire Quantity-Frequency Index for the number of drugs Type of user Intensity/dosage: recorded number of treatment sessions received during assessment, number of hourly group sessions, number of hourly individual sessions Community Oriented Programs Environment Scale (COPES)	**Research design** Design 1: Pre-post test non-equivalent comparison group. Coded[4] for matching. In-house comparison with youth not participating in RSAP and out-of-house comparison with out-of-house group of youth in non-RSAP facilities (non-participating groups not coded because coding impeded participation). Student Assistance Service Corp. implemented the program in six residential facilities; these six were compared with a seventh (similar) facility that did not have RSAP. Design 2: Intervention youth regardless of the hours of intervention were compared with youth who did not participate in the program. Process evaluation to account for why there was an effect (COPES). **Groups similar at baseline?** Intervention group entered voluntarily (self-selected).	Comparison group: At post-test, reported 1% decrease in alcohol use, 5% increase in marijuana use, and 4% increase in tobacco use. Difference in gender and marijuana use found between in-house and out-of-house. Intervention groups: • RSAP effective at both preventing and reducing AOD use • alcohol non-users: 82% who reported no use on pre-test remained non-users • alcohol users: 72% reported use on pre-test, but not on post-test • marijuana non-users: 83% who reported no use on pre-test remained non-users • marijuana users: 59% reported use on pre-test but not on post-test • tobacco non-users: 78% who reported no use on pre-test remained non-users • Tobacco users: 27% reported use on pre-test but not on post-test

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
				comparison group consisted of youth choosing not to participate in RSAP. No difference for gender, age or race. **Follow-up** No **Point estimates and measure of validity for primary outcome measure** The 132 completers were compared with the 35 who only completed pre-test; no significant difference found, ruling out selection-attrition interaction as a threat to internal validity.	RSAP reduced the amount of use and the number of drugs used (tobacco excluded). RSAP is successful at both prevention and early intervention. RSAP is more successful with higher drug users.
R **California and Arizona** **Shane, Jasiukaitis & Green** **(2003)**	**Age** 13–19 (mean 15.9) **Gender** Both (82% male) **Substances** Marijuana, alcohol and other **Voluntary/mandatory** Voluntary **Cultural background** White, Hispanic, Black **Family involvement** No	**Treatment** Structured living environment, individual and group therapy, interventions to address family issues. Safe milieu. **Duration** Los Angeles group: Long-term residence group (9–12 months) Oakland group: Short-term group (28–45 Days) and long-term group (3–12 months) Tucson group: 30-day stay, then step-down aftercare **Eligibility criteria** Resident at one of three residential programs in the study.	**Level 4: Observational study without controls** Multi-site prospective study using univariate repeated measures analysis of covariance. **Sample size** 419 (107 in long-term group and 312 in short-term group) **Outcome measures** • Global Appraisal of Individual Needs (GAIN) • GAIN 1 (intake) GAIN-M90 (90 days post-intake) • TIME	**Research design** The sample was divided into three subgroups: • no psychiatric co-morbidity • a single co-morbidity • mixed (both internalizing and externalizing co-morbidity) Groups were compared at intake and at three, six and 12 months for substance use. **Groups similar at baseline?** Co-morbidity not evenly distributed between levels of care. Long-term group: greater percentage of externalizing diagnosis. Short-term group: greater percentage of mixed disorders. No difference in substance abuse or dependence.	Co-morbidity has • significant effect on frequency of alcohol use • highly significant effect on frequency of other drug use • highly significant effect on number of substance-related problems (co-morbid group had highest rate of drug-related problems at intake, and despite improvement in treatment, remained at most elevated levels during post-treatment) Mixed group showed greatest relapse rate. Those with specific psychiatric problems are less likely to receive a "therapeutically appropriate dose of treatment." Limitations: • sample size reduced due to

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				Follow-up Yes (three, six and 12 months after baseline interview). **Point estimates and measure of validity for primary outcome measure** GAIN test-retest reliability r = 0.70 **Intention to treat analysis** 93% retention rate	missing data (88%); not significant • self-report study • no data on psychopharmacology
R **Los Angeles County, CA** **Orlando, Chan & Morral (2003)**	**Age** 13–17 **Gender** Both (87% male) **Substances** Not specified **Voluntary/mandatory** Volunteered for research but mandated to program by courts **Cultural background** Hispanic, Mexican descent (45%) Hispanic, other (13%) White (17%) Black (14%) Native, Asian or other (11%) **Family involvement** Parents were notified about the study and could remove their children. *Participants were a subset of youth in the Adolescent Outcomes project conducted within RAND's Drug Policy Research Center.	**Goal** Examine the role of treatment program and process effects on retention. Identify the treatment process predictors of retention among a sample of court-referred adolescents. **Underlying theories** Treatment attrition limits the likely effectiveness of residential services. Treatment completion is variable most consistently related to favourable treatment outcomes. Pre-treatment characteristics of motivation, substance use severity, safety, and perceived over- and under-provision of services contribute to retention. Eligibility criteria Youth referred by their probation officer to one of the seven targeted residential programs. 13- to 17-year-olds provided informed consent to participate in the study	**Level 4: Observational study without controls** Longitudinal comparison of two groups **Sample size** 291 (52% were in Phoenix Academy) Phoenix Academy youth were placed in one group; youth referred to six other residential treatment programs (of comparable size and duration) were the second group. **Outcome measures** Global Appraisal of Individual Needs (GAIN) adapted for local implementation. Dennis' five-item Motivation Index. Family risk scale and peer risk scale were used to assess the participant's social environment before entering treatment. Residents' evaluation of treatment community environment, residents' comfort, sense of safety and counsellor support.	**Research design** Baseline interview, then follow-up interviews at three, six and 12 months after the baseline interview. Participants were asked for their perceptions of counsellors, other residents, feelings of safety and if they had received services. Program provided weekly updates on the status of each participant. Groups similar at baseline? Based on pre-treatment characteristics, residents in Phoenix Academy were less likely to remain in treatment. Study participants were comparable with those excluded with respect to demographics, baseline treatment attitudes, substance use severity, mental health and peer risk. Excluded adolescents were a slightly higher risk group. They tended to have lower treatment motivation and the people they lived with before	Both pre-treatment characteristic and treatment process factors contributed to the prediction of retention in residential treatment settings. Longer treatment retention was associated with • greater perceived need for services • higher motivation for treatment • less severe substance use problems prior to treatment entry Youth whose peer groups were characterized by greater levels of crime, violence and substance use tended to be at increased risk for early treatment termination. Protective treatment factors included positive feelings of safety and receipt of services in surplus of perceived need. • Higher ratings on perceived safety were associated with greater likelihood of staying in treatment. • Perceived need for services and receiving services exceeding perceived need

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		Could complete the consent in English. Youth had to be interviewed before their residential placement began. Had to be admitted to one of the seven residential programs participating in the study during the three months after the baseline interview. RAND parent study had 449 participants but only 291 met the criteria for this study. **Treatment** Youth participated in residential treatment programs.		arriving at juvenile hall were more likely to have engaged in risky or illegal activities. Days spent in specified group home during the study period were summed. Internal consistency = 0.91. **Intention to treat analysis** 90% of recruited participants were interviewed at each study wave. Study based on data from a sample of court-referred adolescents in Los Angeles County juvenile justice system. Results may not generalize to youth entering treatment without court pressure or from other regions. Author states that it is possible that adolescents reporting non-receipt of needed services were not in treatment long enough to have received available services.	were protective factors for treatment retention. • Non-receipt of services was associated with earlier drop-out. • Higher perceived resident support was associated with shorter lengths of stay. Sensitivity analysis run restricting sample to those in program less than 30 days; this yielded results similar to those of the full sample.
R **New York** **Jainchill, Hawke, DeLeon & Yagelka (2000)**	**Age** Under 18 12% under 15 20% aged 15 25% aged 16 33% aged 17 10% aged 18 **Gender** Both (71% male) **Substances** Marijuana, alcohol, inhalants, hallucinogens, crack, cocaine, heroin, other opiates, methadone.	**Description** Residential therapeutic communities (TCs). Treatment must accommodate developmental differences, focusing on correcting maladaptive behaviours and attitudes, facilitating maturation and socialization, education and vocational training. Treatment is sequenced in phases or stages. Passage from one phase to the next requires meeting specified criteria.	**Level 4: Observational study without controls** Longitudinal retrospective follow-up study. TC residents followed up after 12 months and outcomes of program completers were compared with those of non-completers. Logistic regression was used to identify predictors of positive outcomes. **Sample size** 938 admissions but some	**Research design** Pre-post measurement on self-reports of drug use, alcohol use. Pre-post measurement of criminal activity. Hair and urine specimens were collected from a sub-sample of those completing the follow-up interview to increase the reliability of self-reported data. **Groups similar at baseline?** See outcomes	**Drug use** Completion of treatment doubled the odds of having declines in post-treatment alcohol and illicit drug use. Completers: Less drug and alcohol use. • 80% reported drug use pre-treatment; 60% reported drug use post-treatment. • 77% reported alcohol use pre-treatment; 57% reported alcohol use post-treatment.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	methamphetamines and other stimulants, barbiturates, sedatives and tranquillizers **Cultural background** 60% European-American **Voluntary/mandatory** Mixture; 58% referred to treatment by criminal justice system. **Family involvement** Yes	**Duration** One year post-treatment beginning the day person left treatment **Eligibility criteria** Admitted between 1992 and 1994 to six drug-free residential therapeutic communities (TC) across nine sites for treatment of drug/alcohol abuse and concomitant problems. TC elected to participate in project. TC program had essential elements of the TC treatment model. Youth were excluded if consent wasn't obtained at admission, insufficient baseline information, youth considered dangerous, or more than 90 minutes of travel time required for field interviewer (didn't apply to females).	didn't meet the eligibility criteria. Follow-up status achieved for 64% of the sample; 6% refused to be interviewed, 1% were deceased. 496 interviews completed; data reported for 485. **Outcome measures** • number of months individual engaged in use of substance at least once a week for the year pre-treatment and for one year post-treatment. • urinalysis for alcohol, marijuana, cocaine and opiate metabolites, and hair assays for alcohol, cocaine and opiate metabolites at follow-up on a subgroup • self-reported criminal activity data obtained for drug possession, drug sales, property crimes, and hustles • number of times arrested or booked in the year before and after treatment	**Follow-up** Yes **Intention to treat analysis** Detailed description of steps taken for tracking available from senior author. **Point estimates and measure of validity for primary outcome measure** Concordance rates for marijuana and cocaine were 62% for marijuana and 80% for cocaine. Thus, the reliability of the self-reported data was good for cocaine, but respondents understated marijuana use.	• A smaller percentage of completers reported any use of alcohol to intoxication, marijuana, hallucinogens and heroin. Non-completers: Decrease in use of most drugs. No reduction in percentage reporting marijuana use, heroin/opiate use, and use of any drugs. Pre-treatment, a greater percentage of non-completers reported any drug use; this percentage remained higher than that of completers. Reduction in drug use across all categories (for both groups) except for heroin/opiates. **Group differences** Pre-treatment non-completers were more frequent users of hallucinogens. Post-treatment (one year follow-up) completers used alcohol, marijuana, heroin/opiates and inhalants less than non-completers. **Criminal activity** Reduction of criminal activity for entire sample in five main categories (use/possession of drugs; sale/distribution of drugs; property crimes; violent crimes; hustles) and for all criminal activity. Completers: • Less criminal activity at one year post-treatment. • Criminal activity reduced from 98% pre-treatment to 68% post-treatment.

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					• Reduction in frequency of all criminal activity. Arrests reduced from 78% pre-treatment to 24% post-treatment. Non-completers: • Reduction in criminal activity. • Reduction in arrests from 78% pre-treatment to 46% post-treatment. **Group differences** • There was no difference between groups reflecting all criminal activity. • A smaller percentage of completers were involved in drug-related criminal activity and violent crimes pre-treatment. • Non-completers had higher number of violent crimes. • Post-treatment, the difference between completers and non-completers increased for all criminal categories except hustles. Reduction in extent of criminal activity across all categories and the number of times arrested and booked. Reduction in violent crimes. At follow-up, completers reported lower levels of property crimes, violent crimes and number of times arrested/booked compared with non-completers. More psychiatric disturbance pre-treatment was negatively

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
					associated with declines in alcohol use. Non-completers had been involved in a greater variety of crimes pre-treatment. The most consistent predictors of reductions in drug use were being Hispanic, more use of a specific drug pre-treatment, completing treatment, having positive relations with counsellors, and not living with one's family of origin or associating with deviant peers post-treatment. A reduced likelihood of being criminally active post-treatment was predicted by being female, completing treatment and not associating with deviant peers post-treatment.
R **Western U.S. state** **Currie (2003)**	**Age** Youth **Gender** Both **Substances** Wide variety **Voluntary/mandatory** Voluntary **Cultural background** White and non-Hispanic Mostly middle class and working class Represented full range economically **Family involvement** Parents provide permission for youth involvement	**Description** Home Base is a hybrid program combining features of medical and "social" models of treatment. Psychiatric evaluation at admission, staff psychiatrist supervises treatment plans, clients receive medical screening throughout stay. Operates as a modified Therapeutic community providing group therapy, confrontation groups, 12-step approach and working with families. RSAP is not a treatment program (it is a prevention/	**Level: 4 Observational study without controls** Examine why many youth do not stay long in residential treatment, or why youth do not succeed. Understand what factors both in and out of the treatment setting encourage success or hinder it. **Sample size** 12 girls, six boys. **Outcome measures** Information gathered from audiotaped interviews, telephone interviews and field notes.	**Research design** Qualitative exploration of the dynamics of treatment and its aftermath. Youth were first interviewed in one treatment facility (called Home Base in study), and were followed for two years after admission. Information drawn from adolescents' own accounts but sometimes supplemented by observation or interviews with patients. Interview information transcribed verbatim and analyzed holistically, no coding.	The most helpful aspects of treatment program: • supportive and practical • when program provided something substantive and tracked real-world problems or need • intensive pragmatic interventions that address institutions that affect youth's lives • respite function • safety • structure/predictability • opportunity to work with family on family dynamics (parents forced to confront concerns) The most alienating aspects: • confrontational interventions

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	Concurrent issues Wide range of co-occurring emotional issues	early intervention program), and it is not successful with jailed youth who use it as a way of getting out of their cells. **Eligibility criteria** Resident of Home Base, available for interview, agreed to participate, and convenience of staff		**Groups similar at baseline?** Only one group in the study; females were over-represented in that group. **Intention to treat analysis** 40% non-compliance overall. Only two of eight original youth completed the program. Small study group Not a true sample of adolescents in treatment generally or even specifically in the Home Base program.	• punitive or demeaning interventions • demeaning consequences of various kinds • ideological judgmental aspects of the program • overabundance of rules and rigidity Authors recommend the rethinking of the role of confrontation and punishment in programs. Significant difference between groups in reduction in AOD use when comparing groups receiving five to 30 hours of intervention with those receiving one to four hours. Results for quantity–frequency index highly significant.
R **Quebec, Canada** **Dobkin, Chabot, Maliantovitch & Craig (1998)**	**Age** Average age 15.5 **Gender** Both **Substances** Not specified, but those addicted to heroin were excluded **Voluntary/mandatory** Voluntary **Family involvement** No (only for intake questionnaire completion) **Additional information** Family structure of participants: • 34.5% lived with both parents	**Description** The treatment program (Centre Jean Lapointe for Adolescents) offers services exclusively in French in Montreal and Quebec. The program is for one year: two months as inpatient, three months as outpatient, and seven months in aftercare. Parents are invited to take part in family therapy. Educational services for adolescents are integrated into the outpatient unit. Inpatient program is subdivided into three phases: integration, treatment planning, and taking responsibility.	**Level 4: Observational study without controls** **Sample size** 282 adolescents (two-thirds were from Montreal clinic): • 141 female • 139 male Parents: 177 mothers (63.2%) and 141 fathers (50.3%) agreed to complete questionnaires prior to their adolescent's treatment. Participants completed questionnaires • prior to treatment • one month post-discharge from inpatient treatment • six months post-discharge	**Research design** Multivariate approach to examining outcomes for three groups of adolescents who entered a multifaceted program: • non-completers (n = 128) • completers with improvements (n = 19) • completers without improvements (n = 48) The authors' comment on limitations of the study: • high non-completion rate for inpatient treatment • relatively poor retention among those who did complete inpatient treatment at first follow-up, which was only one month	**Effectiveness of intervention** Outcome was defined relative to the client. Improvement was measured using the Problem Severity Index of the Personal Experience Screening Questionnaire, comparing pre-treatment with the first post-treatment follow-up. Only 19 subjects were completers with improvement, whereas 48 were completers without improvement and an even larger number (128) did not complete treatment. **Results (significant)** Non-completers: • were less likely to have

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	• 22.5% lived with only one parent • 21.8% lived with a parent and step-parent • 18.2% lived in other types of households (e.g., foster care)	**Recruitment** Adolescents entering treatment facility were invited to participate. Outpatient program and aftercare were offered to all who participated, but clients living outside the large urban centres could not participate for logistic reasons. Excluded were adolescents who were violent, suicidal or addicted to heroin. Goals included • abstinence • reintegration into society (school, workforce) • becoming autonomous • reducing psychological distress **Underlying assumptions** "There is a subset of adolescents who have a long, steady history of behavioural problems which precede and predict their early onset of substance abuse" (p. 177).	**Outcome measures** The Personal Experience Screening Questionnaire was used to assess the adolescent's drug use (frequency, duration, history), and personal and environmental characteristics (emotional distress, problems in thinking, physical and sexual abuse). The Problem Severity Scale was used to measure extent to which the adolescent was psychologically and behaviourally involved with drugs and to assess their risk. The Jesness Personality Inventory was used to distinguish delinquents from non-delinquents, provided a basis for classification into personality types and served as a measure of attitude change. The Family Environment Scale was administered to each adolescent to measure aspects of family functioning and social-environmental characteristics. The Drug Abuse Screening Test was administered to parents, providing a quantitative index of problem severity.	after discharge (many of these participants were "lost" to attrition because they lived in outlying regions of Quebec) Used a variety of validated tools: Internal consistency of the Problem Severity Scale is 0.91 and it has high content validity (p. 179) Internal consistencies of the Family Environment Scale subscales range from 0.61 to 0.78 Internal consistency of the Drug Abuse Screening Test is 0.95 (p. 180) Range for test-retest reliabilities for the individual scales over a one-year period: 0.46–0.72 Range of internal consistency reliabilities for all individual scales: 0.62–0.88	parents who participated in the research • had fathers reporting higher system maintenance of the family • were more likely to have used cocaine • scored higher on maladaption than those who improved • were more likely to report school-related problems (e.g., being suspended) Improved completers: • had fathers with the highest occupational status • had fathers reporting more orientation toward personal growth in the family • had the highest scores on repression, indicating a denial of emotions at pre-treatment Not improved completers: • had fathers who reported the lowest score for personal growth in the family Factors describing the non-completers show they had multiple externalizing problems that interfere with treatment (self-described as alienated, socially maladjusted, aggressive). That parental substance abuse did not predict outcome was likely due to selection bias; non-completers were less likely to have parents who participated in the research.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
F **Unknown U.S. location(s); possibly Miami, FL** **Liddle, Dakof, Parker, Diamond, Barrett & Tejeda** **(2001)**	**Age** 13–18 **Gender** Both (80% male) **Substances** Alcohol, marijuana **Voluntary/mandatory** Voluntary **Cultural background** White non-Hispanic (51%) African-American (18%) Hispanic (15%) Asian (6%) Other (10%) **Family involvement** Yes	**Description** MDFT treatment, MEI treatment and AGT treatment respectively. Each treatment was based on its respective manual. **Duration** Five to six months Each treatment group received 14–16 sessions. MDFT (multi-dimensional family therapy) is based on family therapy and psychotherapy dynamics. MEI (multi-family educational intervention) has a structured psychoeducational focus. AGT (adolescent group therapy) is a peer-to-peer intervention. **Eligibility criteria** • age 13–18 • no history of mental retardation or organic dysfunction • didn't require inpatient detoxification • using illegal substances other than alcohol at least three times per week • not involved in any other form of psychotherapy-oriented drug treatment, or AA or NA	**Level 1: Experimental study** Randomized controlled clinical trial. **Sample Size** 182 (30 refusers) = 152 47 MDFT 52 MEI 53 AGT **Outcome measure** Attrition: termination after first session and before fourteenth, or refusing to return for post-treatment assessment. Drug use and frequency, and number and combination of drugs used: adolescent self-report, collateral report, urinalysis; severity of drug use rated on Guttman-type scale. School performance: Acting-Out Behaviour Scale (AOB) Family functioning: Global Health Pathology Scale of the Beavers Interactional Competence Scales.	**Research design** Clients randomly assigned to one of three treatment groups: • MDFT • MEI • AGT Each therapist received close supervision of one hour per week, plus case review, videotape review and live supervision to ensure internal consistency of the respective model. **Groups similar at baseline** MEI youth had significantly higher family competence than MDFT youth. **Follow-up** Yes **Point estimates and measure of validity for primary outcome measure** Raters were blind to treatment condition and assessment phase. Intra-class correlation coefficient (ICC) used to assess inter-rater reliability (0.85). AOB internally consistent (alpha 0.87); external validity 0.93. Limitations: No information on co-morbid conditions and a *DSM* substance abuse dependence diagnosis. No generalizability. Sample too small by ethnicity and gender to examine these variables adequately.	Significant difference in attrition between MDFT and AGT. Youth in MDFT showed most improvement. Significant changes in drug use and acting-out behaviour across time from intake to termination to the follow-up periods for all subjects. 42% of MDFT youth reported significant reduction in drug use, compared with 25% AGT youth and 32% MEI youth. 12-month follow-up: 45% MDFT youth reported significant change in drug use, compared with 32% AGT youth and 26% MEI youth. School performance: Comparison of number of youth who had a pre-treatment GPA of 2 0 or better with one-year follow-up GPA by group: MDFT 25% to 76% AGT 43% to 60% MEI 36% to 40% Groups did not differ at intake but did at one-year follow-up. Interaction of time and treatment is significant for drug use and family competence.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL / METHODS	STUDY RIGOUR	OUTCOMES
F **Miami, FL** **SAMHSA (n.d.-a)**	**Age** 6–17 **Gender** Both **Substances** Only marijuana noted **Voluntary/mandatory** Not identified **Cultural background** Proven in Hispanic/Latino families, and adapted and tested with African-American **Family involvement** Completely family oriented	**Description** Brief strategic family therapy (BSFT) Step 1: Organize a counsellor family work team. Step 2: Diagnose family strengths and problem relations. Step 3: Develop a change strategy to capitalize on strengths and correct problematic family relations. Step 4: Implement change strategies and reinforce family behaviours. Provides families tools to decrease individual and family risk factors through focused interventions that improve problematic family relations and skill-building strategies that strengthen families. Targets: • acting-out behavioural problems • associations with antisocial peers • early substance use • problematic family relations **Duration** Eight to 12 hours weekly One-hour to 1.5-hour sessions **Eligibility criteria** Not identified	**Level 1: Experimental study** **Sample size** 108 adolescents with substance abuse. Replicated in second study with 79 adolescents with conduct disorders Third replication with 104 adolescents with conduct/ emotional disorders Fourth study of 69 troubled children	**Research design** Randomized to BSFT or community clinic or group counselling. The fourth study randomized to BSFT, individual therapy or control.	• 42% improvement in acting-out behavioural problems • 75% reduction in marijuana use • 58% reduction in association with antisocial peers • retained over 75% of youth in program
F **Liddle, Rowe, Dakof, Ungaro & Henderson (2004)**	**Age** 11–15 **Gender** Both (58 males, 22 females) **Substances** Unspecified	**Description** Peer group treatment: Peer-based group treatment is based on the promise that positive peer influences can buffer young adolescents from drug abuse and provide	**Level 1: Experimental study** Random assignment with balancing to ensure equivalence of groups on four key variables related to outcome: age, gender, ethnicity and family income.	**Research design** Randomized clinical trial. Telephone screening, then face-to-face, baseline assessment.	Both groups had significantly higher retention rate than the 27% 90-day retention reported in National Survey of Community Outpatient Treatment for teen drug abusers.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	Voluntary/mandatory Voluntary **Cultural background** 42% Hispanic 38% African-American 11% Haitian or Jamaican 3% non-Hispanic white 4% other **Family involvement** Yes **Concurrent issues** Yes 39% conduct disorder 29% ADHD 9% depressive disorder	positive behaviour alternatives to substance abuse. Hypothesis: MDFT will more effectively reduce risk factors and promote protective factors in individual, family, peer and school domains. MDFT will be more effective in reducing substance abuse. **Treatment** 90-minute session twice per week for 12–16 weeks. MDFT sessions primarily in the home. Cognitive behavioural therapy (CBT) sessions in clinic. Each case assigned a case manager. Treatment was free and transportation assistance was available. **Duration** 12–16 weeks **Eligibility criteria** • aged 11–15 • referred for outpatient treatment for substance abuse • living with at least one parent figure who could participate in assessment and family therapy • not in need of detox or other intensive services • not have more than three previous arrests • not report using any substance more than three times per week in the month before admission • not be suicidal, psychotic or mentally retarded	**Sample size** 80 47% involved in juvenile justice 47% met criteria for substance abuse and 53% for substance dependence 41 assigned to peer group treatment 39 assigned to MDFT **Outcome measure** Assessment done at intake, six weeks post-intake, and at discharge. • Global Appraisal of Individual Needs (GAIN) • parent and adolescent interviews (CTRADA) • Individual risk factors: Youth Self-Report (YSR: Achenbach) • Family Environment Scale • National Youth Survey Peer Delinquency Scale (SRO) • adolescent interview • Timeline Followback method adapted for adolescents (to evaluate drug consumption)	**Groups similar at baseline?** Yes **Follow-up** Ongoing at time of publishing. **Intention to treat analysis** Three adolescents refused treatment in group (7% refused to attend at least one session); no other information given.	Youth in MDFT showed more rapid decrease in self-reported externalizing symptoms than those in group therapy. Both treatments were effective in decreasing internalizing symptoms. MDFT youth reported more rapid improvement in family cohesion. Group clients reported less family cohesion at each successive assessment. MDFT youth decreased association with delinquent peers more rapidly (71% at intake to 3% at discharge) than group treatment (72% to 18%). MDFT more effective than group at decreasing disruptive classroom behaviour. Both effective at decreasing academic discipline problems. MDFT youth had more rapid decrease in cannabis use (57% to 1%) than group treatment youth (66% to 20%). MDFT youth showed more rapid decrease in alcohol use than group treatment youth.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
F **Unspecified** **Hogue, Liddle, Dauber & Samuolis (2004)**	**Age** Mean age 15.2 **Gender** Both (67% male) **Substances** Marijuana, alcohol, other substances **Voluntary/mandatory** Mixed (22% were court-ordered into treatment) **Cultural background** 65% African-American 25% European-American 10% Hispanic-American **Concurrent issues** Yes • 69% conduct disorder • 61% oppositional defiant disorder • 61% had at least one mood disorder	**Description** One group received MDFT and one group received CBT. Cases in both groups averaged 16.1 sessions; no difference in length of case. Office-based weekly session provided to each group. **Duration** 16–24 weeks **Eligibility criteria** Substance-abusing adolescents from larger randomized sample receiving outpatient services.	**Level 1: Experimental study** Random assignment to groups. The extent of adolescent focus and family focus was not randomly assigned. **Sample size** 51 substance-abusing adolescents (26 received CBT and 25 received MDFT) **Outcome measures** Therapists Behavior Rating Scale (TBRS); raters observed and coded sessions. Timeline Followback interview (TLFB) Child Behavior Checklist (CBCL)	**Research design** Pre- and post- measurement of adolescent outcomes in • drug use • externalizing symptoms • internalizing symptoms One session from each case was randomly selected for coding. Sessions were selected for coding after dividing the sessions into phases. Final study sample included • 10 cases with phase 1 session (sessions 1–5) • 22 cases with phase 2 session (sessions 6–14) • 19 cases with phase 3 sessions (sessions 15+) **Groups similar at baseline?** Yes **Follow-up** No **Point estimates and measure of validity for primary outcome measure** TBRS: psychometric properties are sound. TLFB: most test-retest correlations exceeding 0.85. CBCL: one-week test-retest reliability of 0.93 inter-parent reliability, 0.66 internalizing and 0.80 externalizing.	Main finding: Success in treating adolescent drug abuse and co-occurring symptoms was related to in-session focus on family-related treatment themes. Benefits of focusing on family-related content and themes were as strong with CBT as with MDFT. "Interventions that targeted family themes, but not those that required family member participation in session, predicted treatment gains" (p. 93). CBT focus on family-related therapeutic content led to improved outcomes even in the absence of direct contact with family members. Family-focused interventions facilitated improvement in internalizing symptoms for both treatments with somewhat larger gains in CBT.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
F **South Carolina** **Henggeler, Pickrel & Brondino** **(1999)**	**Age** 12–17 (average 15.7) **Gender** Both (79% male) **Substances** Poly-substance users including alcohol, marijuana, and other **Voluntary/mandatory** Youth and families volunteered **Cultural background** 50% African-American 47% Caucasian 1% Hispanic, Native and other respectively **Family involvement** Yes **Education** 32% of parents dropped out of school 25% were unemployed Average annual income $15,000–$20,000 (USD) **Concurrent issues** 72% met *DSM-III-R* diagnosis for one or more diagnoses in addition to substance abuse or substance dependence • 35% conduct disorder • 12% oppositional defiant disorder • 9% major depression • 10% over-anxious • 10% agoraphobia • 19% social phobia • 16% simple phobia • 4% attention deficit disorder	**Description** A family-based intervention, multisystemic therapy (MST). Therapists and clinical supervisor received 40 hours initial training in MST from developers. Treatment integrity supported by weekly 1.5-hour clinical group supervision, periodic review of cases and interventions, review of therapists' notes and contact logs, and audiotape of all face-to-face and telephone contacts. **Eligibility criteria** • residents of Charleston County, South Carolina. • met the DSM-III-R criteria for substance abuse (56%) or substance dependence (44%). • diagnosis of psychoactive substance abuse or dependence. • formal or informal probationary status. • residing with at least one parent figure **Treatment** Therapeutic alliance and ecological validity facilitated by the following: Therapist assigned and available 24-7. Treatment delivered in home and community setting by therapist. Low therapist caseload (four to five cases) assured availability and flexibility. Therapist provided needed service in lieu of consultation	**Level: 1 Experimental study** Examine the effects and transportability of a family-based intervention, multisystemic therapy (MST). Random assignment to a 2 (treatment type: MST to usual services) x 3 (time: pre-treatment [T1], post-treatment [T2] and six-month post-treatment follow-up [T3]) mixed factorial design. **Sample size** 118 juvenile offenders and their families. Study reports 60 families in the usual services (US) group and 58 in MST. **Outcome measures** Multi-method (self-report, parent report, biological and archival) strategy used to examine • drug use • criminal activity • days out of home and Personal Experience Inventory MST treatment adherence was tapped from caregiver, adolescent and therapist perspectives. MST adherence assessed using 26-item MST adherence measure administered to caregivers and youth in MST group and completed by therapists on all MST families (n = 58).	**Research design** 2 x 3 with random assignment to MST or usual services. Research protocols administered in the home immediately prior to first treatment interviews, shortly after treatment termination, and six months after treatment termination. Data was collected in an interview format for family members who did not have reading skills. Families also completed a monthly telephone interview to monitor their utilization of services. Adolescent drug use assessed through self-report (Personal Experience Inventory) and two random urine toxicology screens for MST (one during treatment and one post-treatment). Criminal activity was measured by youth self-reports on Self-Reporting Delinquency Scale (SRD) and computerized arrest records from Juvenile Justice. **Groups similar at baseline?** Families who consented to participate did not differ from refusers on key variables, adolescent age, gender, race, and self-reported drug use and arrest history. Groups in MST reported higher rates of drug use prior to treatment. External validity enhanced because no youth were	**Outcomes** • MST decreased self-reported use of alcohol, marijuana and other drugs at T2 but changes were not maintained at six-month follow-up. • At T3, changes limited primarily to females and young adolescents. • 50% decrease in out-of-home placement for MST. • More MST youth were incarcerated than US youth (19 versus 16), but for fewer days (MST mean 30 days versus US mean 66 days). Association of modest results to low therapist adherence to MST was analyzed. Therapists in present study demonstrated low treatment adherence; present study did not show treatment effects of criminal behaviour, lending credence to low treatment fidelity. MST as currently specified is not an effective treatment of adolescent substance abuse and dependence.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
		to outside providers. Shared responsibility between therapist and family for clinical outcomes. MST family received services on average of 130 days with average of 40 direct hours and six hours of indirect contact. Comparison group (usual services) attended weekly group meetings following the 12-step program. Mental health, inpatient and residential services were available. Participants in this group received fewer substance abuse or mental health services in first five months: 78% didn't receive substance abuse or mental health services, 7% received only mental health services, 10% received substance abuse services only, and 5% received both substance abuse and mental health services. Seven of nine outpatient youth receiving substance abuse services attended fewer than nine hours of service. Four of six getting outpatient mental health services obtained 10 hours or less.		excluded based on pre-existing mental health, physical health or intellectual difficulties. Predictive validity and internal consistency of MST adherence supported in previous study. **Intention to treat analysis** Research attrition minimal. Archival measures (arrest and incarceration) collected through T3 for all. • 57 of 58 families completed the program and the one dropout received 28 hours of service. • 100% of MST reported at T2 and 93% in US • 93% of MST reported at T3 and 90% in US High retention and low research attrition.	

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
F **Northeastern U.S. city** **Hogue, Liddle, Becker & Johnson-Leckrone (2002)**	**Age** 11–14 **Gender** Both **Substances** Alcohol, marijuana **Voluntary/mandatory** Voluntary **Family involvement** Yes **Education** Grades 6 to 9 **Cultural background** High-risk, inner-city African-American **Concurrent issues** Adolescents at high risk for substance abuse and conduct disorder. Based on analysis of pilot screening data, applicant was considered high-risk under one of two conditions: • endorsement of one or more indicated risk items (e.g., chronic school truancy, mostly failing grades, previous marijuana use, frequent marijuana or other drug use by close friends, history of major delinquent acts) • endorsement of three or more selective risk items (e.g., intermittent school truancy, previous cigarette and alcohol use, favourable attitude toward alcohol and marijuana use held by adolescent and/or close friends, history of parental	**Description** Multi-dimensional family prevention model (MDFP) Customized prevention planning for families for preventive intervention with adolescents at high risk for substance abuse and conduct disorder, which seeks to reduce risk factors and enhance protective factors in four domains of functioning: • adolescent self-competence • family functioning • adolescent school involvement • adolescent peer associations All services provided in a one-to-one setting; session content varied case by case and session to session; 15–25 sessions held over three- to four-month period. Adolescent module and parent module focus on adolescent's status and parenting practices respectively. Interactional module provides context for families to interact in new ways. Extrafamilial module seeks to develop collaboration among all social systems to which the adolescent belongs. **Recruitment** Sample selected over a two-year period from all youth enrolled in a community-based youth enrichment program (CYP) located in an economically disadvantaged	**Level 1: Experimental study** Random matched assignment. **Study design** Pre-test-post-test intervention design with a randomized control group. High-risk youth matched into pairs based on age, sex, race, grade level, family composition. One member of pair randomly assigned to intervention or control group; matched subject assigned to the alternate. If one member dropped out, the remaining member was re-matched and re-randomized. 187 (39%) of 483 adolescents screened over two-year period met criteria. For intervention group, 65 (57%) of 114 families originally randomized agreed to participate. For control group, 65 (89%) of 73 families originally randomized agreed to participate. **Sample size** 124 **Outcome measures** Measures assessed risk factors for drug use and antisocial behaviour in four areas: • adolescent drug use behaviour and attitudes, and delinquent behaviour • peer drug use behaviour and attitudes • family drug use history and attitudes, and history of police involvement	**Research design** See also study design Authors note that behaviour measures used have excellent reliability and validity properties; Self-Perception Profile for Adolescents has good test-retest reliability and high internal consistency, and solid convergent, construct and discriminant validity. Outcome analyses were conducted using 2 (group: intervention, control) x 2 (time: retest, post-test) univariate repeated measures analyses of variance with a single dependent variable. Immediate efficacy of MDFP was investigated by analyzing the within subjects interaction (group x time) term.	**Effectiveness of intervention** Treatment group, sessions completed: • 10 cases (16%) deemed "failure to engage" (0–3 sessions) • 23 cases (38%) deemed "partial dose" (4–14 sessions) • 28 cases (46%) deemed "full dose" (15 or more sessions) Found significant improvement in three domains for the treatment group: • increased self-concept • increased bonding at school • decreased antisocial behaviours by peers Effect size estimates for these improvements were in the small to medium range. Found significant improvement in three areas for the participants as a whole (combined treatment and control): • self-concept • drug use attitudes • school antisocial behaviour Participants showed a significant decline in school grades. Authors comment that intervention effects did not differ substantially across intervention dosage level. Found no difference in treatment effect by adolescent's sex, age at intake, or risk severity at intake.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	drug use or criminal involvement, history of minor delinquent acts)	inner-city neighbourhood in a large northeastern U.S. city; CYP recruited from 10 local middle schools through school-based workshops and recruitment campaigns. Randomized families recruited within two months of enrolling in CYP. Two intervention goals for each family: • helping adolescents achieve an interdependent attachment bond to parents and family • helping adolescents forge durable connections with prosocial influences (e.g., schools, prosocial peer groups, recreational and religious institutions)	• adolescent school attendance, performance and behaviour Instruments Substance use: frequency scale adapted from the National Drug Abuse High School Survey. Behavioural symptoms: selected modules of the Diagnostic Interview Schedule for Children, 2nd ed. (both adolescents and parents); Revised Child Behavior Checklist (parents only); Youth Self-Report (adolescents only). All measure both internalizing and externalizing behaviour problems. Adolescent self-competence: Self-Perception Profile for Adolescents; drug use attitudes assessed using a measure based on Hawkins et al., 1992 (see paper). Family functioning: assessed using a measure developed by the Chicago Youth Development Study (see paper, p. 9). Adolescent school involvement: Three different scales, one each for school bonding, school antisocial behaviour and school grades (see paper, p. 9). Adolescent peer associations: prosocial peer associations (measure not named); peer antisocial behaviour (measure adapted from an Oregon Social Learning Center questionnaire; see paper, pp. 9–10).		

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
F **Philadelphia, PA** **Terjanian (2002)**	**Age** 14–21, mean 17.9 **Gender** 64% male **Substances** Unknown **Voluntary/mandatory** Voluntary **Cultural background** 90% white 62% Catholic **Family involvement** Assessment of families • 42% parents separated/divorced **Education** • school and legal problems • mean 9.3 yrs education, 35% failed a grade • 41% working outside home • 41% arrested at least once (11% for drugs)	**Treatment** Weekly family therapy (average 11–13 sessions) Parent groups **Duration** First assessment within one to two weeks of admission; six months treatment; follow-up 15 months after initiation of treatment. **Eligibility criteria** As part of initial intake at a substance abuse program.	**Level 3: Controlled observational study** Pre-test and post-test assessment, non-equivalent comparison group design used to identify specific aspects of parent-child and family communication that predict better or worse drug use treatment outcomes. **Sample size** 176 adolescents and families **Outcome measures** Parent-Adolescent Communication Scale (PAC) (administered to adolescents only). Family Adaptability, Cohesion & Evaluation Scale (FACES), 2nd ed. (standardized and reliable); three-level subscales. Drug Severity Index (DSI) (used as the dependent or outcome variable).	**Research design** • data from past NIDA study • non-randomized/no control • univariate correlational analyses • Pearson product–moment correlations applied • ANOVA of multiple independent variable and interactions between grouped variables **Point estimates and measure of validity for primary outcome measure** FACES-II (standardized and reliable) **Intention to treat analysis** No indication of dropouts	Circumplex model characterizes family communication styles. • significance found on FACES scores • significant correlation between perception of communication with adolescents and fathers with DSI for communication, perceived adaptability before treatment • no significant impact between relational style or interaction upon drug severity difference (pre- and post-treatment) • adaptability: significant correlation with decreased drug use following treatment • cohesion/agreement: no significant correlation with drug use change • communication: significant correlation with adolescent's improvement after treatment

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
F **Midwest USA** **Duncan (2000)**	**Age** Unknown **Gender** Six male, three female **Substances** Cannabis; 50% also had history of alcohol or hallucinogen use **Voluntary/mandatory** Voluntary **Cultural background** Caucasian, middle class, suburban, midwestern United States **Family involvement** Yes **Concurrent issues** Some participants diagnosed with depression or ADHD	**Description** Once-per-week aftercare program (multi-family and peer group with random drug testing) used to explore participant perspectives of their treatment experiences in a family-based adolescent substance abuse treatment program. **Eligibility criteria** • cannabis dependence (DSM-IV) • recruited from family-based intensive outpatient treatment program • only adolescents who had successfully completed treatment (abstaining)	**Level 4: Observational study without controls** **Sample size** Nine adolescents Nine parents Five staff • opportunistic sampling (who was available and met criteria) • recruitment via telephone call; participation rates of 90% adolescents, 82% parents, 100% staff **Outcome measures** Consistent focus-group questions across all three groups • first level: Ethnograph (1998) software; direct transcription comparisons • second level: analysis of common phrases • third level: development of "themes" • fourth level: selective coding describing relationship between theme and treatment outcome	**Research design** • qualitative • three separate focus groups • multi-dimensional, audio recording, standard questions • four-level qualitative analysis • quantitative indicator developed to index comparative frequency of themes **Groups similar at baseline?** Assumed age biasing minimal. **Point estimates and measure of validity for primary outcome measure** Internal validity through second cross-validation of second-, third- and fourth-level analyses Note: Responses are beliefs/opinions, not statements of outcome.	Agreement across the three study groups that • multi-family groups are useful • positive outcomes from parent's improved ability to set limits and consequences • family engagement is compromised if parents feel blamed • non-threatening engagement techniques are necessary • controlled use is not appropriate for chemically dependent youth • youth are triggered to use substances if other family members do Agreement between adolescents and parents that • AA groups are useful
F **USA** **Dauber (2004)**	**Age** 13–17 **Gender** 79% male 21% female **Substances** 9% previous treatment 22% alcohol dependent 74% marijuana dependent 13% marijuana abuse 16% other substance dependence	**Description** Part 1: Evaluation of model differentiation and adherence to treatment focus Part 2: Evaluation of homogeneity in model implementation of treatment focus and exploratory analysis of mean-level differences among therapists Part 3: Association between treatment focus and outcome at immediate post-treatment and six-month follow-up	**Level 4: Observational study without controls** Focus on "process research" or understanding the course of change during treatment and the role of "treatment focus." **Sample size** 113 juvenile justice youth drawn from larger randomized clinical trial study sample of 224 (Liddle et al., in press)	**Research design** Analysis of random selection of videotapes from three phases of treatment. **Groups similar at baseline?** Sample bias analysis to parent study group showed this group to be younger and lower rate of alcohol abuse; no other demographic differences. **Follow-up** six-month 12-month	**Outcomes** Model differentiation: t-scores and profile analysis; CBT therapists devote majority of time to discussion of drug use, MDFT to family issues. Heterogeneity in treatment focus: variety of variance tests; significant variance in drug focus in CBT; significant variance in family focus in MDFT. Process outcome link: hierarchical linear regressions.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	Voluntary/mandatory 29% court-ordered to receive treatment **Cultural background** Urban 68% African-American 19% Caucasian 13% Hispanic **Family involvement** Yes, in assessments and treatment 50% single parent 17% with both biological parents 33% other family compositions **Education** 72% mothers and 82% fathers completed at least high school 57% mothers & 81% fathers employed 36% had household income less than $10,000 (USD) 81% youth enrolled in school **Concurrent issues** Referred by probation, mental health or justice: • 58% had legal trouble in previous year • 58% on probation • 60% had family member with criminal involvement 91% had one diagnosis (DISC-2), 82% had two diagnoses, 44% at least three diagnoses (see substances). • 81% externalizing disorder • 28% depressive disorder • 52% internalizing disorder • 69% conduct disorder • 55% oppositional defiant disorder	Part 4: Developmental and demographic differences multi-dimensional family therapy (MDFT) cognitive behavioural therapy (CBT) **Eligibility criteria** Aged 13–17, currently using drugs, have at least one caretaker able to participate in assessments and treatment. Excluded if history of mental retardation/organic disorder, need for inpatient detox, or suicidal. Completed pre-treatment assessment and at least one post-treatment assessment (immediately post-treatment, six-month follow-up or 12-month follow-up), and one videotaped therapy session.	**Outcome measures** Assessments at pre-treatment, post-treatment, six-month follow-up, 12-month follow-up Multiple imputation (MI) using NORM software (for use with missing data); several statistical analyses were run prior to study implementation to ensure data validity. • Therapist Behavior Rating Scale, 4th version (inter-rater reliability tested) measured treatment focus • Vanderbilt Therapeutic Alliance Scale (observer rated) measured therapeutic alliance • Timeline Followback method measured quality/frequency daily consumption • Revised Child Behavior Checklist measured externalizing and internalizing behaviours	**Point estimates and measure of validity for primary outcome measure** Several analyses run to determine MI ability to predict missing data • independent sample t-tests and chi-square tests run **Intention to treat analysis** Participant wave non-response attrition where one of the four sequential assessments not complete. • data imputation to estimate missing data; rates of missing data 20% post-treatment drug use, 18% post-treatment internalizing and externalizing, 26% follow-up drug use, 18% six-month follow-up internalizing and externalizing (reliable imputations considered viable with these rates of missing data)	Mixed: drug and family focus generally not predictive of outcome. Developmental differences: bivariate correlations; both program treatments were tailored to the unique needs of specific subgroups of adolescents.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
W, E **Various U.S. states** **SAMHSA** **(n.d.-b)**	**Age** 5–11 and 12–14 **Gender** Both **Substances** Not specified **Voluntary/mandatory** Voluntary **Cultural background** American Indian, Alaskan Native, Hispanic/Latino, Hawaiian and other Pacific islander **Family involvement** Yes	**Description** Project Venture An outdoor experiential youth development program. Interventions included individual, peer, family, school and community experiential games, one after-school session per week for two to three hours, one daylong activity per month, one seven-day leadership camp, four community service learning projects per year, and four potluck dinners or other family events. Development of social and emotional competence through experiential activities that encourage critical thinking, problem solving and increased risk levels that challenge youth to develop intra- and interpersonal skills. Relies on American Indian traditional values. **Duration** 25–52 weeks **Eligibility criteria** None specified	**Level 1: Experimental study** Repeated measures with groups randomly assigned to treatment and control. **Sample size** Not specified **Outcome measures** Nowicki-Strickland locus of control scale. National Youth Survey *Note*: there have been replications using program and matched comparison youth.	**Research design** Measure at baseline, post-treatment, 12 and 18 months follow-up. **Groups similar at baseline?** Not specified **Point estimates and measure of validity for primary outcome measure** Comparison fidelity instrument and evaluation instrument is available from SAMHSA.	Delayed onset or reduction of alcohol, marijuana and illegal drug use. Reduced • alcohol and illegal drug use in previous 30 days • lifetime tobacco use • frequency of tobacco use • frequency of inhalant use • depression • aggressive behaviour Improved • resiliency • locus of control • school attendance

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
W **Five U.S. states** **Russell** **(2001)**	**Age** 12–20 (75% 16–18) **Gender** Both (69% male) **Substances** Cannabis dependence, cannabis abuse, alcohol dependence and abuse, amphetamine dependence **Voluntary/mandatory** Voluntary Cultural background Not specified Family involvement Yes (completed Y-OQ) **Concurrent issues** Behavioural disorders, mood disorders (depression, dysthymic disorder, adjustment disorder, bipolar disorder, oppositional defiant disorder)	**Description** Outdoor behavioural healthcare (OBH) programs **Duration** 21–180 days (average 38 days) Empathic and self-discovery wilderness challenge provides an alternative for resistant adolescents unwilling to commit to traditional psychological treatment because of the stigma associated with it. **Eligibility criteria** Admission to one of the eight OBH programs participating in the study.	**Level 4: Observational study without controls** Before-and-after study. **Sample size** 858 out of 1035 ▪ 25.8% had a substance abuse or dependence disorder **Outcome measures** Client self-report: Youth-Outcome Questionnaire (Y-OQ) Parental assessment of well-being: Y-OQ	**Research design** Pre-test/post-test Study included eight programs that are members of the Outdoor Behavioural Healthcare Industry Council. Y-OQ administered on admission and at discharge. **Groups similar at baseline?** Not specified **Follow-up** Yes, at three, six and 12 months post-discharge **Intention to treat analysis** No data gathered on the 17% who did not agree to participate.	Reduction in severity of behavioural and emotional symptoms. Improved interpersonal. Reductions in scores for 13- and 19-year-olds were significantly greater. Parents perceived clients' presenting symptoms as more severe than did the clients, but they also perceived symptoms at discharge that were similar and close to normal range of symptoms. Clients with mood disorders showed highest client self-report scores at admission and lowest at discharge. Clients with substance problems reported the lowest admission scores and highest discharge scores. Parent's assessment of those clients diagnosed with substance problems was highest at admission and discharge. Client and parent assessment of 13-year-olds was the highest reduction of all age groups. Females showed a greater reduction in scores than males. Continuous flow expedition (CFE) model with an average of eight weeks in treatment, all in wilderness, showed the greatest reductions in scores. Each of the longer-term OBH models indicated clients had moved to within or very close to normal range of functions.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
O **California** **SAMHSA (n.d.-d)**	**Age** 14–19 **Gender** Both **Substances** Alcohol, illegal drugs, tobacco **Voluntary/mandatory** Voluntary **Cultural background** African-American, Asian-American, Hispanic/Latino, White **Family involvement** None **Education** High school	**Description** Project Toward No Drug Abuse (TND) Ongoing research project funded by the National Institute on Drug Abuse since 1992. • behavioural modification • in-school curricula • skill development **Underlying theories** Young people at risk for substance abuse will not use substances if they • are aware of misleading information that facilitates substance use (e.g., myths about substance use, stereotyping) • have skills that help them lower their risk for use (e.g., coping skills, self-control) • appreciate the consequences that substance use may have on their own and others' lives (e.g., chemical dependency) • are aware of cessation strategies • have decision-making skills to make a commitment not to use substances **Duration** 12 sessions over four to six weeks	**Level 1: Experimental study** **Sample size** About 1,000 youth (nested within classrooms) participated in each trial.	**Research design** Two versions of TND (TND-I and TND-II) tested in three experimental field trials to date, involving two or three conditions in each design. TND-I is original nine-lesson program; TND-II is 12-lesson program with lessons on marijuana and cigarette use. 1997–98 trial of TND-II involved 18 alternative high schools. Randomized block design used to assign six schools to one of three conditions: • standard care (i.e., the control group) • 12-lesson classroom program • 12-lesson self-instructional version of the classroom program An earlier trial of TND-I in three regular high schools had a two-group randomized block design where 26 classrooms were assigned to one of two conditions: • nine-lesson classroom program • standard care control group **Follow-up** One year	**Outcomes** Alternative high schools: • 27% reduction in cigarette use • 22% reduction in marijuana use • 9% reduction in higher levels of alcohol use • 26% reduction in hard drug use Regular high schools: • 25% reduction in hard drug use • 12% reduction in higher levels of alcohol use Other outcomes: In one study of an alternative school, there was a 21% reduction in weapons-carrying among males. In regular schools, there was a 19% reduction in weapons-carrying among males. Victimization decreased 6%.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
O **(parent-based)** **Buffalo, NY** **McGillicuddy, Rychtarik, Duquette & Morsheimer (2001)**	**Participants** Parents of substance-abusing children **Child age range** 12–21 Mean age: Treatment group: Parents: 44.86 Adolescents: 16.64 Wait-list group: Parents: 45.38 Adolescents: 15.88 **Gender** Treatment group: *Parents*: 93% female 7% male *Adolescents*: 29% female 71% male Wait-list group: *Parents*: 88% female 12% male *Adolescents*: 25% female 75% male **Substances** Alcohol or illicit drugs (marijuana, sedatives, hallucinogens, inhalants, stimulants, opiates, powder and crack cocaine) Treatment group: • adolescents with current alcohol problem: 86% • adolescents with current drug problem: 79% • Wait-list group: • adolescents with current alcohol problem: 88% • adolescents with current drug problem: 88%	**Description** Eight-week parent training program using the behavioural-analytic model for construction of skill training programs (pilot study). **Recruitment** Response to flyers, newspaper advertisements, and radio and television commercials publicizing the program. **Program entry criteria** Assessed through a two-step process: • Respondents were administered a brief telephone interview to assess broad screening criteria. • Eligible callers were scheduled for an intensive face-to-face interview with a project therapist. Eligible participants had to • be the parents/legal guardians of the child • have lived in the same household as the child at least 30 of the previous 90 days • have reported that the child was actively engaged in substance use (at least monthly use over the previous six months) and was not receiving treatment for substance use On average, parents reported seven days of alcohol use and nine days of illicit drug use monthly by the adolescents.	**Level 1: Experimental study** **Sample size** 22 families • 86% of these had just one parent participating. • Data from only one parent used for remaining families (parent with more frequent interaction with the youth). **Study design** Participants completed a pre-treatment assessment during which outcome measures were assessed. At the end of eight weeks, participants were again assessed with the primary outcome measures. Project therapists: • were randomly assigned; for every two cohorts, each therapist was assigned once • each completed 20 hours of program-specific training and practice time prior to start of the pilot • were experienced in skill training Group sessions were videotaped; a compliance checklist of primary session content was developed for each session (79% compliance found on independent review of half the sessions by two clinical staff members). **Outcome measures** Consisted of data related to • parent's coping skills • parent's psychological functioning	**Research design** Eligible individuals were assigned randomly to receive treatment (skills training) immediately or following an eight-week delay (wait-listed). Treatment and research staff were blinded to the cohort randomization scheme and to pending treatment assignment of the next cohort. Post-treatment follow-up was 100%. Sample size was very limited, leading to lower power to detect study effects. Used variety of standardized instruments. Limitations noted by authors: • The study needs to be replicated on a larger scale. • The skill training intervention needs to be compared with an alternative intervention. • Adolescent substance use was not based on adolescent report or drug testing results (parents' perceptions may have been inaccurate). • The study excluded parents with self-reported active/current substance abuse problems. • Lack of follow-up beyond immediate post-treatment prevented learning whether changes in coping skills and associated functioning would persist.	**Effectiveness of intervention** On average, participants attended 89% of group sessions. Adolescent drug and alcohol use: No effect. Parent's coping: Parents who received training scored significantly higher than parents on the wait list. Improved substance-related coping skills and the psychological functioning of parents of substance-using adolescents. Preliminary data suggest that parent skill training may lead to reductions in teen marijuana use. No effect on family functioning. Results supported the hypothesis that reductions in adolescent substance use would lead to improved parental functioning.

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
	Voluntary/mandatory Voluntary **Family involvement** Yes **Education** (average years) *Treatment group*: Parents: 13.79 Adolescents: 9.71 (71% enrolled in school) *Wait-list group*: Parents: 13.88 Adolescents: 9.13 (88% enrolled in school) **Cultural background** Parents: 86% white	Excluded were parents who • were involved in another form of treatment in relation to the child's substance use • met criteria for severe psychiatric disorders (e.g., schizophrenia), assessed by a modification of the structured Clinical Interview for Diagnosis • met criteria for an alcohol use problem (a score of 9 or higher on the Alcohol Use Disorders Identification Test) • met criteria for a drug use problem (a score of 4 or higher on the Drug Abuse Screening Test pertaining to drug use over the past year) • used illicit substances more frequently than once per month • did not live within commuting distance of the research site **Underlying assumptions** Parents of substance-abusing adolescents tend to be distressed and many lack effective substance-related coping skills.	• family communication • adolescent's alcohol and other drug use Administered at pre- and post-treatment for most measures. **Instruments used** Parental coping: *Two measures*: • PSI Form X, PSI Form Y at post-treatment, administered by a rater blind to treatment condition • replication of role-play assessment of substance-related problems, using vignettes developed from parents' descriptions during the post-treatment assessment of four problem situations that occurred over the previous six months during the pre-treatment period and over the eight-week treatment period • responses videotaped and scored on a six-point competency scale Parent's psychological functioning: Three self-report measures: • parental depression using the Beck Depression Inventory • parental anxiety using the anxiety subscale of the Brief Symptom Inventory • parental anger using the state-anger subscale of the State-Trait Anger Expression Inventory Family functioning: Measured using the Parent-Adolescent Communication Scale to assess "communi-	These concerns are being addressed in a recently initiated full-scale clinical trial (of the skills training program, a 12-step facilitation program, and a one-year follow-up).	

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
			cation openness" and "communication problems" Adolescent drug and alcohol use: Parents' report obtained using the Timeline Follow-back method • at pre-treatment, reported use for the 50 days preceding assessment • at post-treatment, reported use for the 50 days comprising the treatment • for illicit drugs, use reported as number of days of use • for alcohol, reported number of days of consumption and the number of standard drinks consumed per drinking day		
O **(community-based)** **California and South Carolina** **SAMHSA (n.d.-e)**	**Age** All ages; did not differentiate out adolescents **Gender** Both **Substances** Not specified **Voluntary/mandatory** Voluntary **Cultural background** Multicultural	**Description** Community Trials Intervention to Reduce High Risk Drinking (RHRD) **Goal** Help communities reduce various types of alcohol-related accidents, violence, and resulting injuries. Multi-component, community-based program developed to alter alcohol use patterns of people of all ages (e.g., drinking and driving, under-age drinking, acute "binge" drinking) and related problems. **Eligibility criteria** N/A **Treatment** Five prevention components aimed at • Alcohol Access • Responsible Beverage Service	**Level 3: Controlled observational study** Sample size Six intervention and comparison communities located in northern and southern California, and South Carolina. Approximately 100,000 residents. **Outcome measures** • community telephone survey including self-reported measures of drinking, and drinking and driving • traffic crash records • emergency room surveys • intoxicated patron and underage decoy surveys • local news coverage of alcohol-related topics	**Research design** Longitudinal, multiple time series design across three intervention communities. Matched comparison communities served as no-treatment controls.	• 51% decline in self-reported driving when "over the legal limit" in the intervention communities relative to the comparison communities • 6% decline in self-reported amounts consumed per drinking occasion • 49% decline in self-reported "having had too much to drink" • 10% reduction in night-time injury crashes • 6% reduction in crashes in which the driver had been drinking • 43% reduction in assault injuries observed in emergency rooms • 2% reduction in hospitalized assault injuries

SETTING, AUTHOR (DATE)	TARGET GROUP	INTERVENTION	STUDY LEVEL/ METHODS	STUDY RIGOUR	OUTCOMES
		• Risk of Drinking and Driving • Underage Alcohol Access • Community Mobilization	• roadside surveys conducted on weekend evenings		
O **(school-based prevention program)** **Many locations, beginning in Hillsborough County, FL** **SAMHSA** **(n.d.-c)**	**Age** 5–17 School age K–12 **Gender** Both **Substances** Alcohol, tobacco, illegal drugs **Voluntary/mandatory** Universal **Cultural background** African-American, Asian-American, Hispanic/Latino, White **Family involvement** Yes	**Description** Too Good for Drugs (TGFD) Prevention: Reduce adolescents' intention to use tobacco, alcohol, and marijuana; reduce fighting; and strengthen protective and resiliency factors. **Eligibility criteria** Child is attending school-universal program **Treatment** • life/social skills treatment • task-oriented family education sessions to improve family interaction • peer resistance education • peer norms against alcohol, tobacco and illegal drug use • classroom drug education • classroom-based skills development • after-school activities • media education to counter alcohol and tobacco advertising Grades K–5: 10 weekly 30- to 45-minute lessons Grades 6–8: 10 weekly 45-to 50-minute lessons Grades 9-12: core curriculum with 14 weekly one-hour lessons and 12 one-hour infusion lessons **Duration** 5–24 weeks	**Level 3: Controlled observational study/** **Level 4: Observational study without controls** Mixed middle school: Repeated measures treatment-control design. High School: pre-test/post-test randomized design. **Sample size** Middle school: 1,318| High School: 201 from a large high school and 303 from six high schools in a small rural Florida school district. **Outcome measures** Pre-test/post-test	**Research design** Independent evaluator examined pre-test equivalence between treatment and control groups, potential bias of loss of student data over time, quality of program implementation, and estimates of reliability and validity of assessment tools. **Follow-up** No	Reduction in behaviours related to risk factors: • attitudes toward drugs • attitudes toward violence • perceived peer norms • peer disapproval of use • emotional competence • social and resistance skills • goals and decision-making • perceived harmful effects • increase in protective factors TGFD students evidenced fewer intentions to • smoke cigarettes (33% middle school, 58% high school) • drink alcohol (38% middle school, 50% high school) • smoke marijuana (25% middle school, 45% high school) • fight (45% high school) Positive effects on risk and protective factors related to substance use including social skills, decision making, goal setting, self-efficacy, perception of harm, and attitudes toward drug use.

Appendix D: Concurrent disorder reference list

The following is a listing of articles that fell outside the scope of this review but may be of interest to AADAC. These documents were found either as hits in the search process or through a review of reference lists. A few documents provided a limited amount of more general information for the report, but for the most part such articles were screened out because of their focus on concurrent disorders.

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